Repair/Parts

ProMix® 2KE

Plural Component Proportioner

3A0870L

EN

Self-contained, electronic plural component paint proportioner. For professional use only.

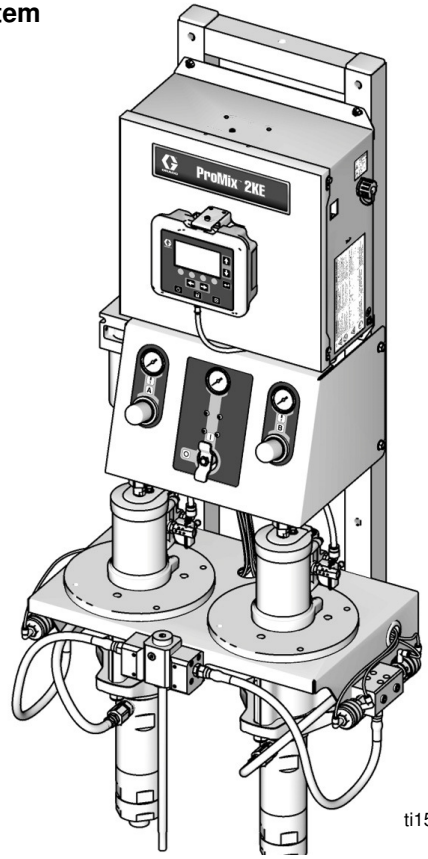
Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.

See pages 3 and 4 for model information, including maximum working pressure and approvals.

For patent information, see www.graco.com/patents

Pump System



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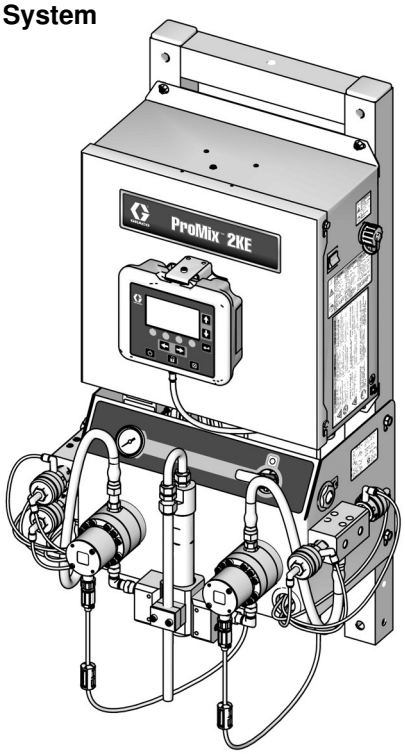
Meter System



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Related Manuals

Manual	Description
3A0868	ProMix 2KE, Pump-Based, Operation
3A0869	ProMix 2KE, Meter-Based, Operation
313599	Coriolis Meter
308778	G3000 Flow Meter
312781	Fluid Mix Manifold
312782	Dosing Valve
312784	Gun Flush Box Kit 15V826
312792	Merkur Displacement Pump
312793	Merkur Bellows Displacement Pump
312796	NXT Air Motor

Manual	Description
406714	Rebuild Kit for High Pressure Dispense Valve
406823	Dispense Valve Seat Kits
3A1244	Graco Control Architecture Module Programming
3A1323	16G353 Alternator Conversion Kit
3A1324	16G351 Electric Power Conversion Kit
3A1325	ProMix 2KE Stand Kits
3A1332	24H255 3-Color Valve Stack Kit
3A1333	24H253 USB Module Kit
313542	Beacon Tower

Non-Hazardous Location Models

Approved for Non-Hazardous Location					
Part No.	**Series**	**Description**	**Maximum Working Pressure psi (MPa, bar)**	**USB Module**	**Approvals***
Pump Systems					FM C US APPROVED, CE
24F088	A	3:1, Merkur, A and B	300 (2.1, 21)		
24F089	A	23:1, Merkur, A and B	2300 (15.8, 158)		
24F090	A	30:1, Merkur, A and B	3000 (20.7, 207)		
24F091	A	45:1, Merkur, A and B	4500 (31.0, 310)		
24F092	A	3:1, Merkur A, Merkur Bellows B	300 (2.1, 21)		
24F093	A	23:1, Merkur A, Merkur Bellows B	2300 (15.8, 158)		
24F094	A	35:1, Merkur A, Merkur Bellows B	3500 (24.1, 241)	✔	
24F095	A	3:1, Merkur, A and B	300 (2.1, 21)	✔	
24F096	A	23:1, Merkur, A and B	2300 (15.8, 158)	✔	
24F097	A	30:1, Merkur, A and B	3000 (20.7, 207)	✔	
24F098	A	45:1, Merkur, A and B	4500 (31.0, 310)	✔	
24F099	A	3:1, Merkur A, Merkur Bellows B	300 (2.1, 21)	✔	
24F100	A	23:1, Merkur A, Merkur Bellows B	2300 (15.8, 158)	✔	
24F101	A	35:1, Merkur A, Merkur Bellows B	3500 (24.1, 241)	✔	
Meter Systems					
24F080	A	G3000, 1 color/1 catalyst	3000 (27.58, 275.8)		
24F081	A	G3000, 3 colors/1 catalyst	3000 (27.58, 275.8)		
24F082	A	G3000, 1 color/1 catalyst	3000 (27.58, 275.8)	✔	
24F083	A	G3000, 3 colors/1 catalyst	3000 (27.58, 275.8)	✔	

* *ProMix 2KE non-hazardous location equipment manufactured in the United States, with serial number beginning with A or 01, has FM and CE approvals. Equipment manufactured in Belgium, with serial number beginning with M or 38, has CE approval.*

Hazardous Location Models

ProMix 2KE systems are not approved for use in hazardous locations unless the base model, all accessories, all kits, and all wiring meet local, state, and national codes.

Approved for Hazardous Location Class 1, Div 1, Group D (North America); Class 1, Zones 1 and 2 (Europe)					
Part No.	**Series**	**Description**	**Maximum Working Pressure psi (MPa, bar)**	**USB Module**	**Approvals***
Pump Systems					
24F102	A	3:1, Merkur, A and B	300 (2.1, 21)		**II 2 G** **Ex ia px IIA T3 Ta = 0°C to 54°C** **FM10 ATEX 0025 X** **Intrinsically safe and purged equipment for Class I, Division 1, Group D, T3 Ta = 0°C to 54°C** **0359** See Special Conditions for Safe Use in **Warnings**, page 5.
24F103	A	23:1, Merkur, A and B	2300 (15.8, 158)		
24F104	A	30:1, Merkur, A and B	3000 (20.7, 207)		
24F105	A	45:1, Merkur, A and B	4500 (31.0, 310)		
24F106	A	3:1, Merkur A, Merkur Bellows B	300 (2.1, 21)		
24F107	A	23:1, Merkur A, Merkur Bellows B	2300 (15.8, 158)		
24F108	A	35:1, Merkur A, Merkur Bellows B	3500 (24.1, 241)		
24F109	A	3:1, Merkur, A and B	300 (2.1, 21)	✔	
24F110	A	23:1, Merkur, A and B	2300 (15.8, 158)	✔	
24F111	A	30:1, Merkur, A and B	3000 (20.7, 207)	✔	
24F112	A	45:1, Merkur, A and B	4500 (31.0, 310)	✔	
24F113	A	3:1, Merkur A, Merkur Bellows B	300 (2.1, 21)	✔	
24F114	A	23:1, Merkur A, Merkur Bellows B	2300 (15.8, 158)	✔	
24F115	A	35:1, Merkur A, Merkur Bellows B	3500 (24.1, 241)	✔	
Meter Systems					
24F084	A	G3000, 1 color/1 catalyst	3000 (27.58, 275.8)		
24F085	A	G3000, 3 colors/1 catalyst	3000 (27.58, 275.8)		
24F086	A	G3000, 1 color/1 catalyst	3000 (27.58, 275.8)	✔	
24F087	A	G3000, 3 colors/1 catalyst	3000 (27.58, 275.8)	✔	

* *ProMix 2KE hazardous location equipment manufactured in the United States, with serial number beginning with A or 01, has ATEX, FM, and CE approvals, as noted. Equipment manufactured in Belgium, with serial number beginning with M or 38, has ATEX and CE approvals, as noted.*

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

⚠ WARNING

FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

SPECIAL CONDITIONS FOR SAFE USE

- To prevent the risk of electrostatic sparking, the equipment's non-metallic parts should be cleaned only with a damp cloth.
- **Pump Systems:** The aluminum adapter plate may spark upon impact or contact with moving parts, which may cause fire or explosion. Take precautions to avoid such impact or contact.

ELECTRIC SHOCK HAZARD

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment.
- Connect only to grounded power source.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.

WARNING

INTRINSIC SAFETY

Intrinsically safe equipment that is installed improperly or connected to non-intrinsically safe equipment will create a hazardous condition and can cause fire, explosion, or electric shock. Follow local regulations and the following safety requirements.

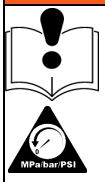
- Only models with model numbers 24F084-24F087 and 24F102-24F115, utilizing the air-driven alternator, are approved for installation in a Hazardous (explosive atmosphere) Location. See **Hazardous Location Models**, page 4.
- Be sure your installation complies with national, state, and local codes for the installation of electrical apparatus in a Class I, Group D, Division 1 (North America) or Class I, Zones 1 and 2 (Europe) Hazardous Location, including all of the local safety fire codes, NFPA 33, NEC 500 and 516, and OSHA 1910.107.
- To help prevent fire and explosion:
  - Do not install equipment approved only for a non-hazardous location in a hazardous location. See model ID label for the intrinsic safety rating of your model.
  - Do not substitute system components as this may impair intrinsic safety.
- Equipment that comes in contact with the intrinsically safe terminals must be rated for Intrinsic Safety. This includes DC voltage meters, ohmmeters, cables, and connections. Remove the unit from the hazardous area when troubleshooting.
- The equipment is intrinsically safe when no external electrical components are connected to it.
- Do not connect, download, or remove USB device unless unit is removed from the hazardous (explosive atmosphere) location.

SKIN INJECTION HAZARD

High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not spray without tip guard and trigger guard installed.
- Engage trigger lock when not spraying.
- Do not point gun at anyone or at any part of the body.
- Do not put your hand over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

WARNING



EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDSs to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
- Always wear chemically impermeable gloves when spraying, dispensing, or cleaning equipment.

PERSONAL PROTECTIVE EQUIPMENT

You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Important Two-Component Material Information

Isocyanate Conditions

Spraying or dispensing materials containing isocyanates creates potentially harmful mists, vapors, and atomized particulates.

Read material manufacturer's warnings and material MSDS to know specific hazards and precautions related to isocyanates.

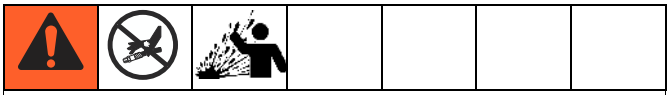
Prevent inhalation of isocyanate mists, vapors, and atomized particulates by providing sufficient ventilation in the work area. If sufficient ventilation is not available, a supplied-air respirator is required for everyone in the work area.

To prevent contact with isocyanates, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons, and goggles, is also required for everyone in the work area.

Material Self-ignition

Some materials may become self-igniting if applied too thickly. Read material manufacturer's warnings and material MSDS.

Keep Components A and B Separate



Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination of the equipment's wetted parts, **never** interchange component A (resin) and component B (isocyanate) parts.

Moisture Sensitivity of Isocyanates

Isocyanates (ISO) are catalysts used in two component coatings. ISO will react with moisture (such as humidity) to form small, hard, abrasive crystals, which become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity. If used, this partially cured ISO will reduce performance and the life of all wetted parts.

NOTE: The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

To prevent exposing ISO to moisture:

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Use moisture-proof hoses specifically designed for ISO, such as those supplied with your system.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Never use solvent on one side if it has been contaminated from the other side.
- Always lubricate threaded parts with ISO pump oil or grease when reassembling.

Changing Materials

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.

Pressure Relief Procedure

To reduce the risk of skin injection, relieve pressure when you stop spraying, before changing spray tips, and before cleaning, checking, or servicing equipment.

NOTE: The following procedure relieves all fluid and air pressure in the ProMix 2KE system.

Pump Systems

1. Press on Run Mix Spray (Screen 2) or from any screen to put the system in Standby.
2. Follow procedure for **Purging Fluid Supply System**, page 10, if desired or necessary.
3. Shut off air supply to A and B pumps and solvent supply pumps.
4. With the gun triggered, push the manual override on the A and B dose and solvent valve solenoids to relieve pressure. See FIG. 1, page 12. Verify that fluid pressure is reduced to 0.
5. Reinstall the Control Box cover.

Meter Systems

1. Press on Run Mix Spray (Screen 2) or from any screen to put the system in Standby.
2. Shut off the A1 (A2 and A3, if using multiple colors) and B fluid supply pumps/pressure pots.
3. Remove the Control Box cover.
4. With the gun triggered, push the manual override on the A1 (A2, A3), and B dose valve solenoids to relieve pressure. See FIG. 1, page 12.
5. Follow **Purging** procedure, page 11.
6. Shut off the fluid supply to solvent valves A and B.
7. With the gun triggered, push the manual override on the A and B solvent valve solenoids to relieve solvent pressure. See FIG. 1. Verify that solvent pressure is reduced to 0.
8. Reinstall the Control Box cover.

Purging

Pump Systems

There are 2 pump purging procedures in this manual:

- **Purging Mixed Material**
- **Purging Fluid Supply System**

Use the criteria listed for each procedure to determine which procedure to use.

Purging Mixed Material

There are times when you only want to purge the fluid manifold, such as:

- end of potlife
- breaks in spraying that exceed the potlife
- overnight shutdown
- before servicing the fluid manifold assembly, hose or gun.

1. Press on Run Mix Spray (Screen 2) or from any screen to put the system in Standby.
2. Trigger the gun to relieve pressure.
3. If you are using a high pressure gun, engage the trigger lock. Remove spray tip and clean tip separately.
4. If using an electrostatic gun shut off the electrostatics before flushing the gun.
5. Set the solvent supply pressure regulator at a pressure high enough to completely purge the system in a reasonable amount of time but low enough to avoid splashing or an injection injury. Generally, a setting of 100 psi (0.7 MPa, 7 bar) is sufficient.
6. If using a gun flush box, place the gun into the box and close the lid. Press on Run Mix Spray (Screen 2). The purge sequence automatically starts.

   If the gun flush box is not used, trigger the gun into a grounded metal pail until the purge sequence is complete.

   When done purging, the system automatically switches to Standby mode.
7. If the system is not completely clean, repeat step 6.

   NOTE: If necessary, adjust purge sequence so only one cycle is required.
8. Trigger the gun to relieve pressure. Engage trigger lock.
9. If spray tip was removed, reinstall it.
10. Adjust the solvent supply regulator back to its normal operating pressure.

NOTE: If your system uses 2 guns, you must trigger both guns simultaneously during a purge to purge both guns and lines. Verify that clean solvent flows from each gun. If not, repeat purge or clear clog/blockage in system.

Purging Fluid Supply System

Follow this procedure before:

- the first time material is loaded into equipment
- servicing
- shutting down equipment for an extended period of time
- putting equipment into storage

1. Press on Run Mix Spray (Screen 2) or from any screen to put the system in Standby.
2. Trigger the gun to relieve pressure.
3. If you are using a high pressure gun, engage the trigger lock. Remove spray tip and clean tip separately.
4. If using an electrostatic gun, shut off the electrostatics before flushing the gun.

5. Disconnect the component A and B fluid supplies at the pump inlets, and connect solvent supply lines.
6. Adjust the solvent fluid supply pressure. Use the lowest possible pressure to avoid splashing.
7. Remove the Control Box cover to access the solenoid valves. See FIG. 1, page 12.
8. Purge as follows:
   - Purge component A side. See FIG. 1, page 12. Press the manual override on the Dose Valve A solenoid valve and trigger the gun into a grounded metal pail.

     Purge component B side. Press the manual override on the Dose Valve B solenoid valve and trigger the gun into a grounded metal pail until clean solvent flows from the gun.

     Repeat to thoroughly clean the mix manifold.
9. Reinstall the Control Box cover.
10. Shut off the solvent fluid supply.
11. Disconnect the solvent supply lines and reconnect the component A and B fluid supplies.

NOTE: If your system uses 2 guns, you must trigger both guns simultaneously during a purge to purge both guns and lines. Verify that clean solvent flows from each gun. If not, repeat purge or clear clog/blockage in system.

NOTE: The system remains full of solvent.

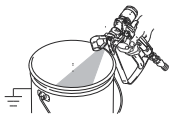
Meter Systems

Purge the system:

- at the end of potlife
- breaks in spraying that exceed the potlife
- overnight shutdown or end of shift
- the first time material is loaded into equipment
- servicing
- shutting down equipment for an extended period of time

1. Press on Run Mix Spray (Screen 2) or from any screen to put the system in Standby.
2. Trigger the gun to relieve pressure.
3. If you are using a high pressure gun, engage the trigger lock. Remove spray tip and clean tip separately.
4. If using an electrostatic gun shut off the electrostatics before flushing the gun.
5. Set the solvent supply pressure regulator at a pressure high enough to completely purge the system in a reasonable amount of time but low enough to avoid splashing or an injection injury. Generally, a setting of 100 psi (0.7 MPa, 7 bar) is sufficient.
6. If using a gun flush box, place the gun into the box and close the lid.
7. Press on Run Mix Spray (Screen 2). The purge sequence automatically starts.

   If the gun flush box is not used, trigger the gun into a grounded metal pail until the system returns to Standby mode.

   
8. If the system is not completely clean, repeat step 6.

   NOTE: If necessary, adjust purge sequence so only one cycle is required.
9. Trigger the gun to relieve pressure. Engage trigger lock.
10. If spray tip was removed, reinstall it.
11. Adjust the solvent supply regulator back to its normal operating pressure.

NOTE: The system remains full of solvent.

NOTE: If your system uses 2 guns, you must trigger both guns simultaneously during a purge to purge both guns and lines. Verify that clean solvent flows from each gun. If not, repeat purge or clear clog/blockage in system.

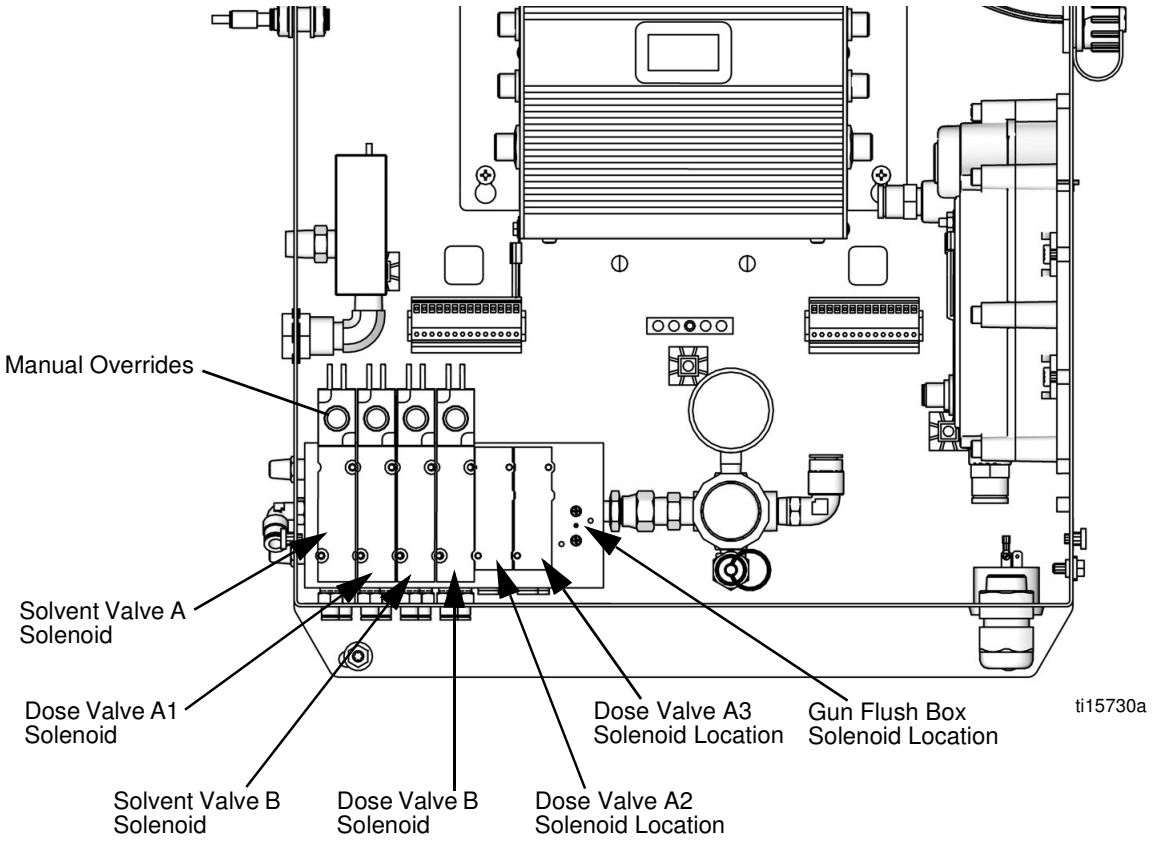


FIG. 1. Solenoid Valves in Control Box

Shutdown

1. Follow **Purging** procedure for your system, page 10 or 11.
2. Close main air shutoff valve on air supply line and on ProMix 2KE.
3. **Non-IS Systems:** Shut off ProMix 2KE power (0 position). **NOTE:** Meter-based systems will restart in Recipe 0.

Maintenance Recommendations

The following table shows starting maintenance recommendations. Maintenance needs will vary based on individual applications and material differences.

Component	Recommended Maintenance Frequency
Solvent Valves	1,000,000 cycles
Fluid Filter	daily
Air Filter	monthly
Pumps	250,000 cycles
Dose Valves	1,000,000 cycles
Meters	5,000 gallons

Service

Before Servicing

- To avoid electric shock, turn off power before servicing.
- Servicing the Control Box exposes you to high voltage. Shut off power at main circuit breaker before opening enclosure.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.
- Do not substitute system components as this may impair intrinsic safety.
- Read **Warnings**, pages 5- 8.

1. Follow **Pressure Relief Procedure**, page 9, if service time may exceed pot life time, before servicing fluid components, and before transporting equipment to a service area.
2. Close air shutoff valves.
3. **Non-IS Systems:** Shut off power (0 position).
4. If servicing Control Box, also shut off power at main circuit breaker.

Replace the Air Filter Element

Removing a pressurized air filter bowl could cause serious injury. Depressurize air line before servicing.

Pump systems have two air filters: the 5 micron air manifold filter (209) and the 40 micron pump air filter (206). Meter systems have only the 5 micron filter (209). Check filters daily and replace element(s) as needed. Order 15D909 (5 micron) or 15D890 (40 micron).

1. Close main air shutoff valve on air supply line and on system. Depressurize air line.
2. Remove the filter cover (A).
3. Unscrew the filter bowl (B).
4. Remove and replace element (206a, 209a).
5. Screw filter bowl (B) on securely. Install cover (A).

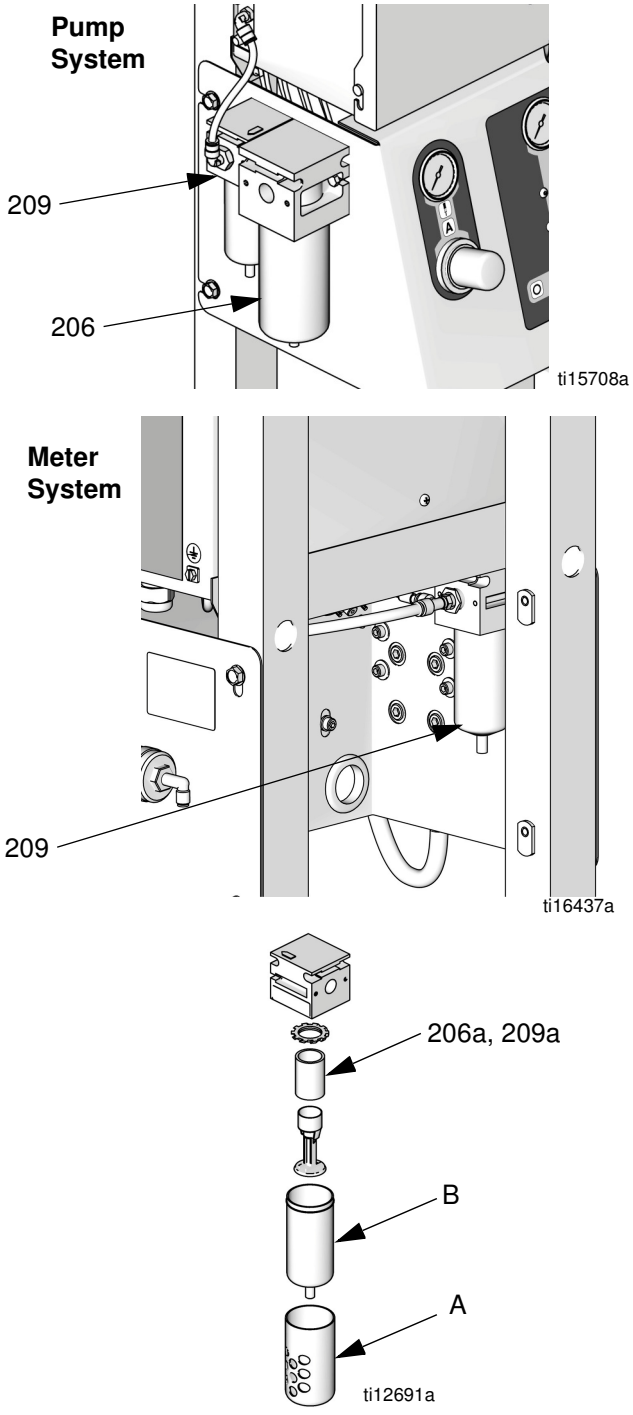


FIG. 2. Replace Air Filter Element(s)

Replace Solenoids

The system has a minimum of 4 solenoids. If you have a 3-color system or a gun flush box, you have additional (optional) solenoids for each.

To replace a single solenoid:

1. Follow **Before Servicing**, page 13. Disconnect main power.
2. Open Control Box.
3. Disconnect 2 solenoid wires (N) from harness (320). See FIG. 3.
4. Unscrew 2 screws (P) and remove solenoid (306).
5. Install new solenoid (306).
6. Connect 2 wires (N) to harness (320). Solenoid wires are polarized (red+, black-). Refer to System Electrical Schematics, pages 54-57.
7. Replace Control Box cover.

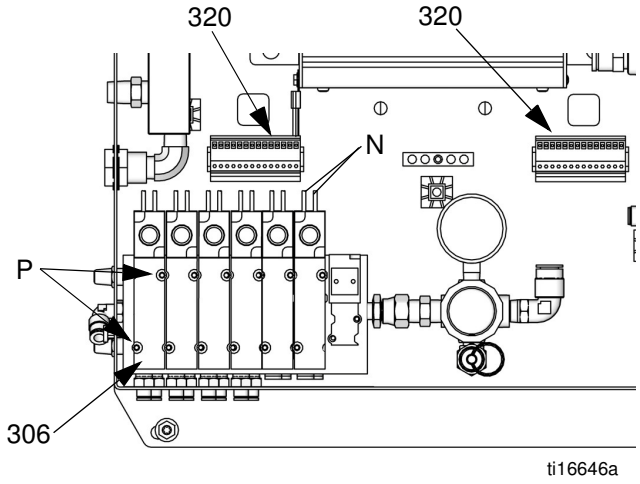


FIG. 3. Replace a Single Solenoid

To replace the solenoid module:

1. Follow **Before Servicing**, page 13. Disconnect main power.
2. Open Control Box.
3. Disconnect all solenoid wires (N) from harnesses (320).

NOTE: If you have an intrinsically safe model, you will need to remove the alternator air regulator from the solenoid module. See page 18 for removal instructions.

4. Remove two screws (305).
5. Remove and replace solenoid module.
6. Connect all wires (N) to harnesses (320). Solenoid wires are polarized (red+, black-). Refer to System Electrical Schematics, pages 54-57.
7. Replace Control Box cover.

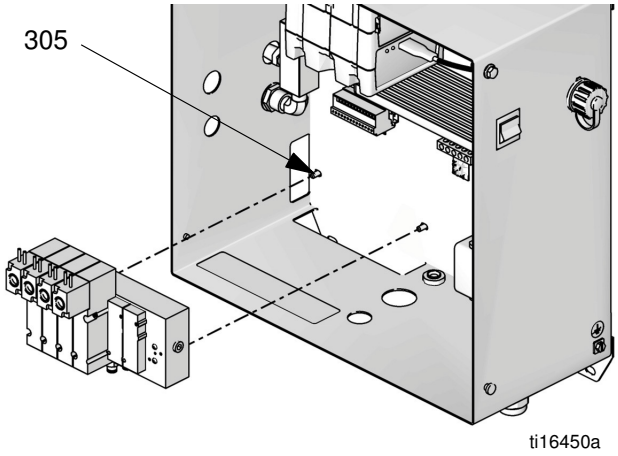


FIG. 4. Replace Solenoid Module

Replace the Power Supply

All electrical wiring must be completed by a qualified electrician and comply with all local codes and regulations.

Wall Power Supply and Filter

1. Follow **Before Servicing**, page 13. Disconnect main power.
2. Open Control Box.
3. Disconnect the three input wires from the line filter (403).

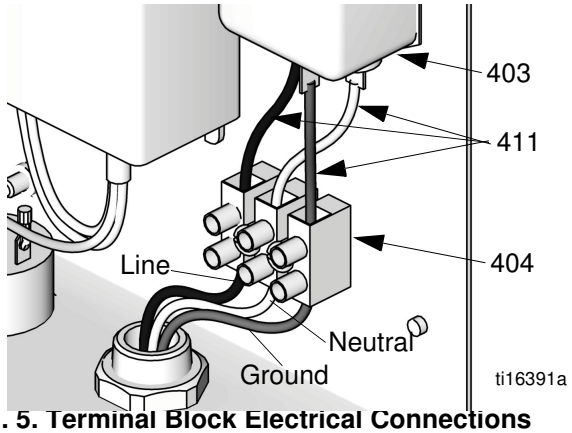


FIG. 5. Terminal Block Electrical Connections

4. See FIG. 8. Disconnect the power supply CAN cable (401a) from the advanced fluid control module (302).
5. Disconnect line filter wires and power supply wires from the power switch (402).
6. Disconnect the power supply ground wire, PS(GND), from the advanced fluid control module ground terminal (T).
7. Remove four screws (405) and remove power supply (401). If replacing filter, remove two screws (407) and the filter (403).
8. Install the new power supply (401) and line filter (403), using supplied screws (405, 407), as shown.
9. See FIG. 8. Connect wire harness (410/LF) to the line filter (403) and to the power switch (402), as shown. See also Electrical schematic.
10. Connect the power supply wire harness (411/PS) to the switch (402), as shown. See also Electrical Schematic. Connect the PS ground wire to the ground terminal (T) of the advanced fluid control module.
11. See FIG. 5. Connect wire harness (411) to the line filter (403) and terminal block (404) as shown. See also Electrical Schematic.
12. Connect CAN cable (401a) to the advanced fluid control module.

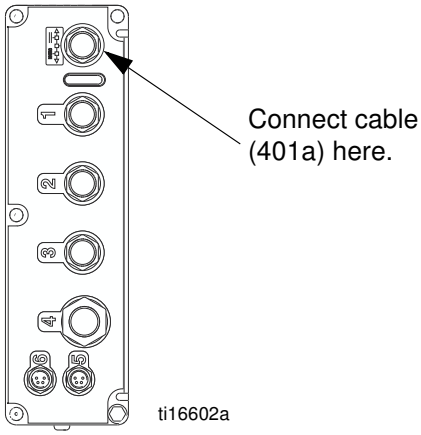


FIG. 6. Reconnect CAN cable.

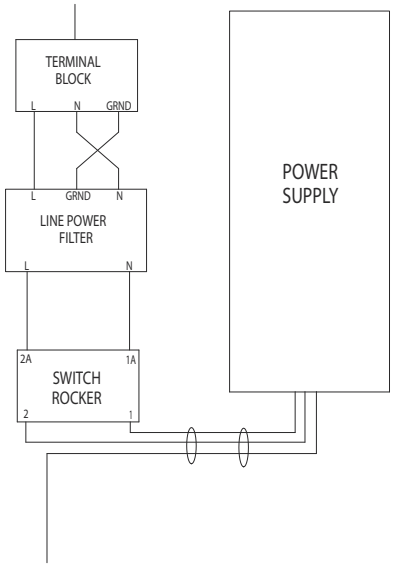


FIG. 7. Electrical Schematic

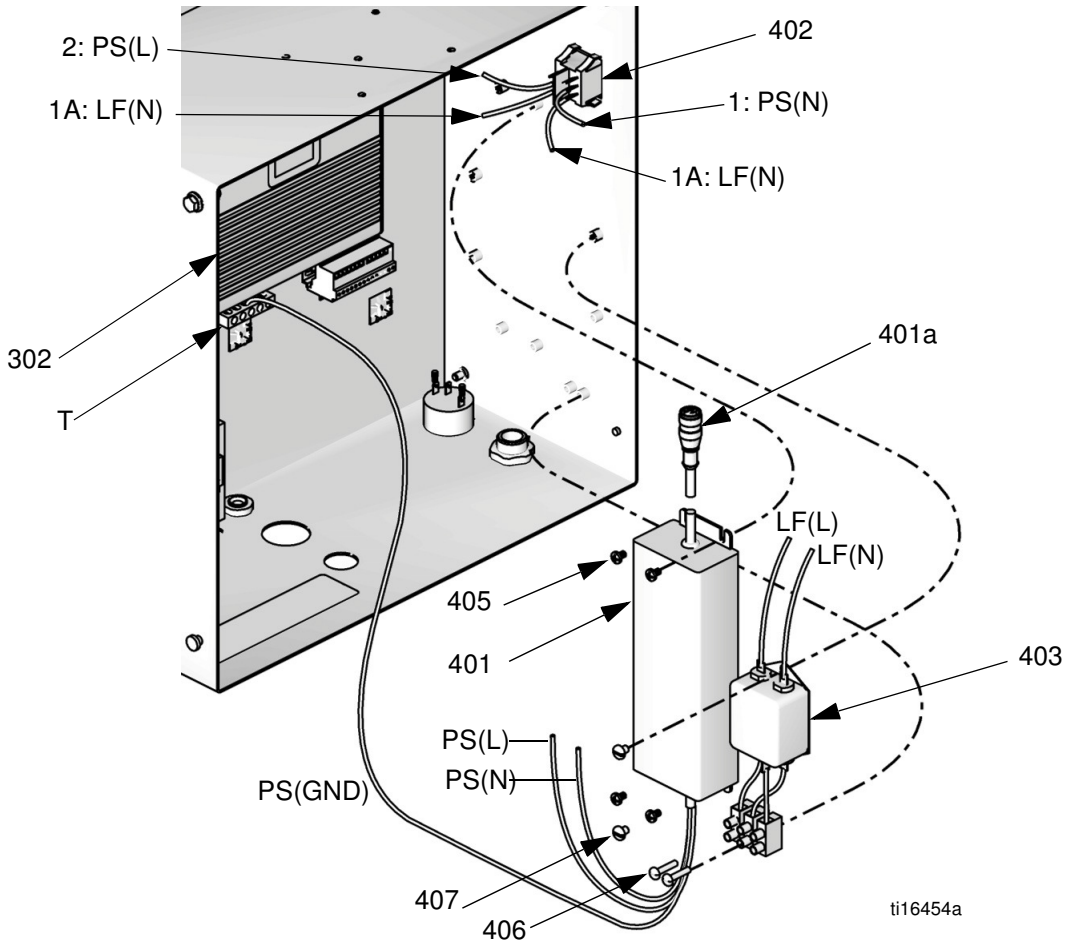


FIG. 8. Replace Wall Power Supply

Alternator Power Supply and Turbine

1. Follow **Before Servicing**, page 13. Disconnect main air.
2. Open Control Box.
3. See FIG. 9. Disconnect output power cable connections from alternator module (501). Disconnect ground lead (G) from control box ground terminal (T).
4. Disconnect the power supply cables from the Advanced Fluid Control Module, the USB Module, and the Display Module.
5. Disconnect air regulator line and exhaust air line from alternator module.
6. Remove four screws (509) from mounting to remove alternator from control box.
7. Remove seven screws (501h) to separate alternator housings.
8. Replace turbine (501d) if necessary. Lightly lubricate turbine o-ring to ease alternator housing reassembly.
9. Follow steps in reverse order to reassemble alternator regulator assembly and to reconnect power

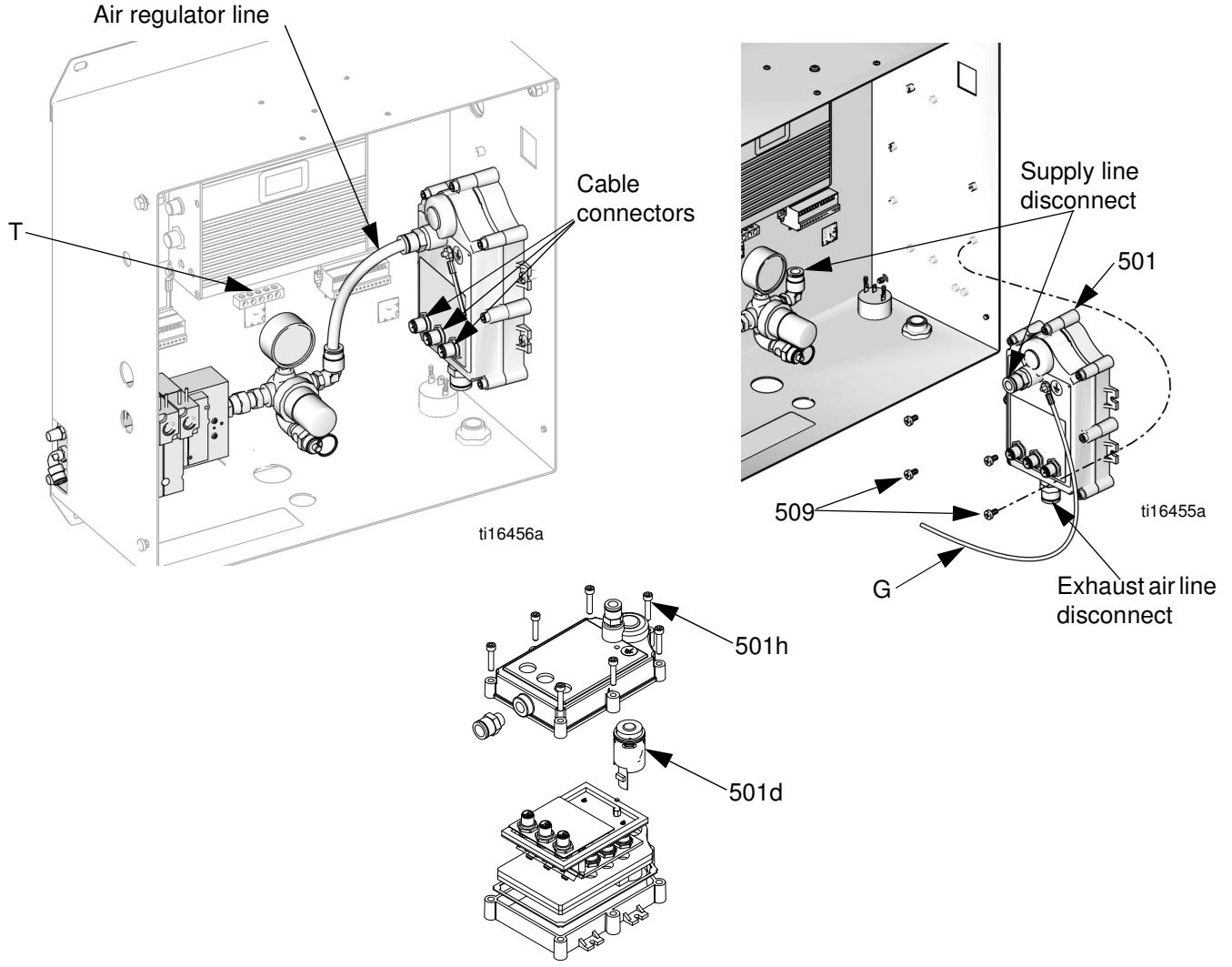


FIG. 9. Remove Alternator Module (and Turbine)

Replace Alternator Regulator

1. Follow **Before Servicing**, page 13. Disconnect main air.
2. Open Control Box.
3. Disconnect supply air line from regulator assembly (505).
4. Loosen air regulator swivel fittings (506) and remove from solenoid module.
5. Repair or replace alternator regulator parts as necessary. See **Alternator Power Assembly**, page 46, for repair parts. Replace air regulator swivel fitting (506).
6. Reconnect air line. Set regulator air pressure to 18 psi (0.12 MPa, 1.2 bar).

NOTICE

To avoid damage to the alternator, do not set the regulator air pressure higher than 18 psi (0.12 MPa, 1.2 bar).

7. Close Control Box and restore power.

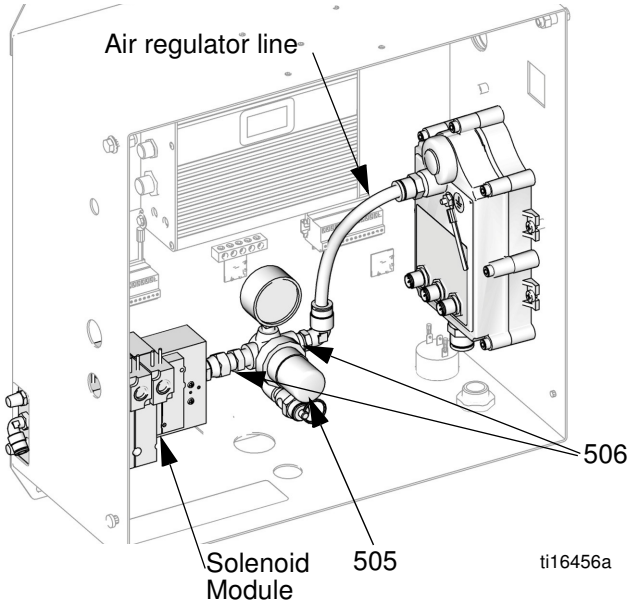


FIG. 10. Replace Alternator Regulator

Replace Advanced Fluid Control Module (AFCM)

1. Follow **Before Servicing**, page 13. Disconnect main power.
2. Open Control Box.
3. Remove all cables from AFCM (302). Take note of cable locations.
4. Disconnect ground wire from ground screw (GS).
5. Loosen four mounting screws (303).
6. Slide AFCM up and out of keyhole slots.
7. Follow steps in reverse order to install a new AFCM. See electrical schematic for cable connection information.
8. Follow instructions in Manual 3A1244 to update the software on the new AFCM.
9. Close Control Box and restore power.

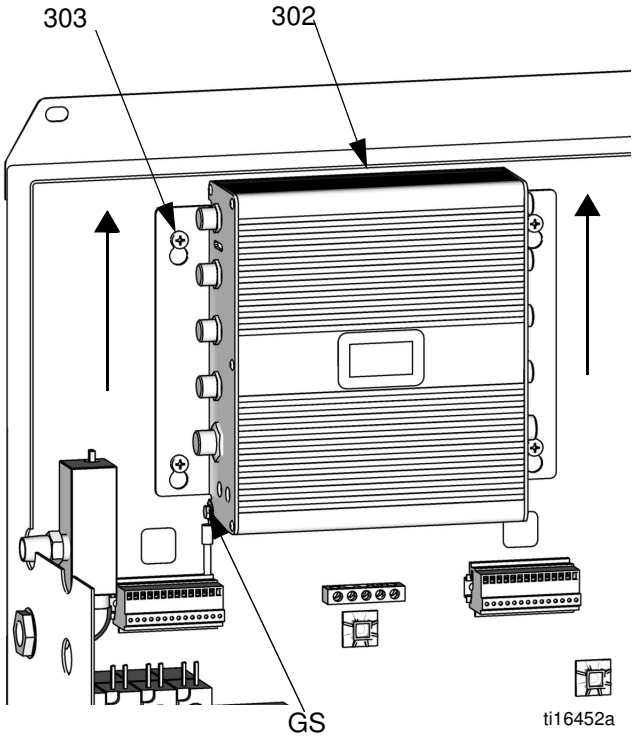


FIG. 11. Replace AFCM

Replace Alarm

1. Follow **Before Servicing**, page 13. Disconnect main power.
2. Open Control Box.
3. Disconnect alarm wires from alarm (311).
4. Unscrew alarm jam/mounting nut to remove alarm.
5. Assemble new alarm. Reconnect alarm wires.
6. Close Control Box and restore power.

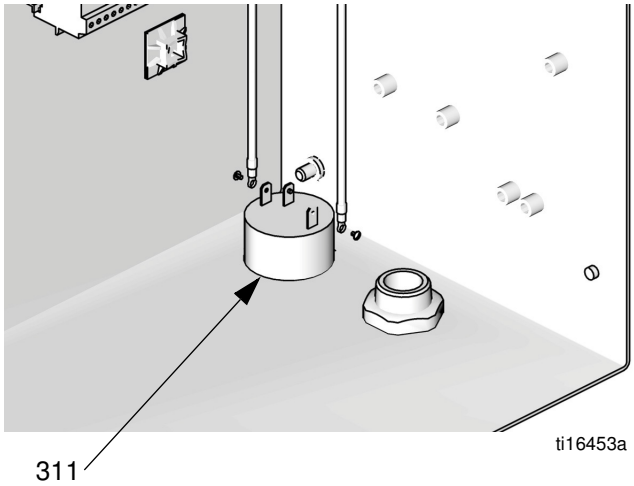
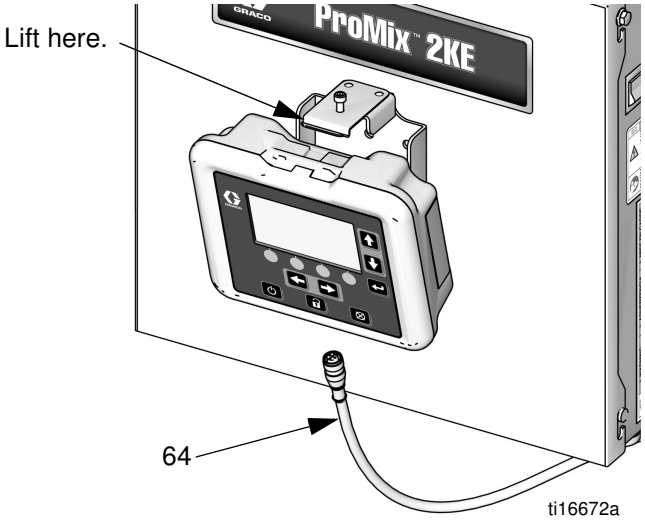
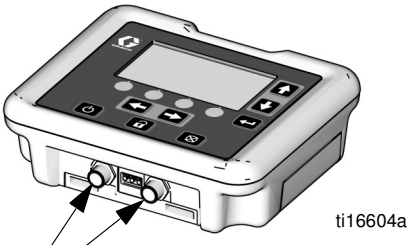


FIG. 12. Replace Alarm

Replace Display Module

1. Follow **Before Servicing**, page 13.
2. The Display Module (63) snaps tightly into the mounting bracket (49). To remove it, lift up on the front of the bracket and, at the same time, pull the Display Module out.
3. Disconnect the CAN cable (64).
4. Replace with a new Display Module.
5. Reconnect the CAN cable (64) as shown.
6. Follow instructions in Manual 3A1244 to update the software on the new Display Module.





J6
Connect cable (64) here (either port).

FIG. 13. Replace Display Module

Replace USB Module

1. Follow **Before Servicing**, page 13. Disconnect main power.
2. Open Control Box.
3. **Non-IS Systems:** Disconnect Display Module CAN cable, Advanced Fluid Control Module CAN cable and USB cable from the USB module (340).
   IS Systems: Disconnect Alternator CAN cable and USB cable from the USB module (340).
4. Remove ground screw (343) from top of Control Box for USB module and bracket.
5. Remove four mounting screws (341) from USB module and remove module.
6. Follow steps in reverse order to install a new USB module.

   Non-IS Systems Cable Connections:
   - CAN cable from J6 (either port) on the Display Module to P3 on the USB Module.
   - CAN cable from J8 on the Advanced Fluid Control Module to P4 on the USB Module
   - USB cable (345) from the port on the Control Box to the port on the USB Module.

   IS Systems Cable Connections:
   - CAN cable from J2 on the Alternator Module to P3 on the USB Module.
   - USB cable (345) from the port on the Control Box to the port on the USB Module.
7. Follow instructions in Manual 3A1244 to update the software on the new USB Module.
8. Close Control Box and restore power.

To help prevent fire and explosion, do not connect, download, or remove the USB flash drive unless the unit is removed from the hazardous (explosive atmosphere) location. Never leave the USB flash drive in the USB port.

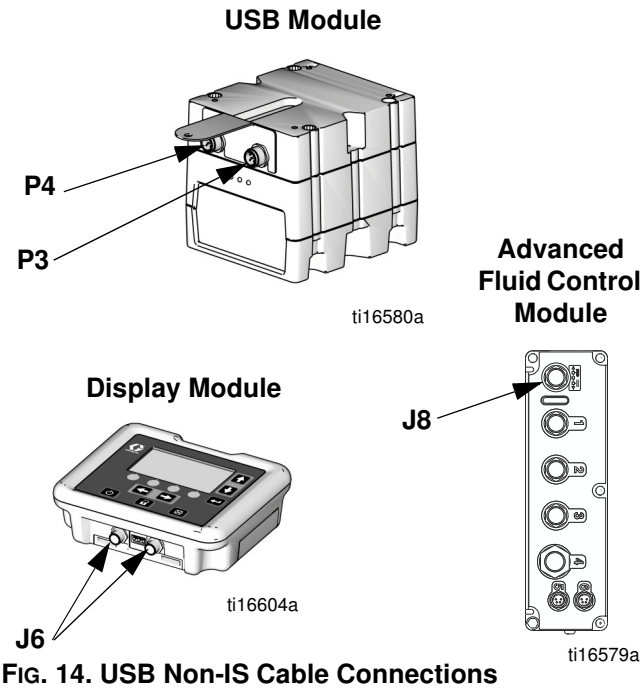


FIG. 14. USB Non-IS Cable Connections

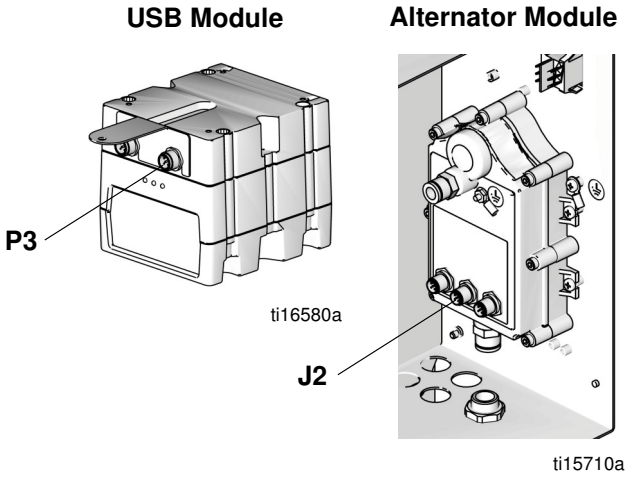


FIG. 15. USB IS Cable Connections.

Update Software

Order Software Token Kit 16D922 to update software. Manuals 3A1244 and 406905 will accompany all software updates. Follow all instructions and warnings in these manuals to update your Display Module, Advanced Fluid Control Module, and USB Module (if used).

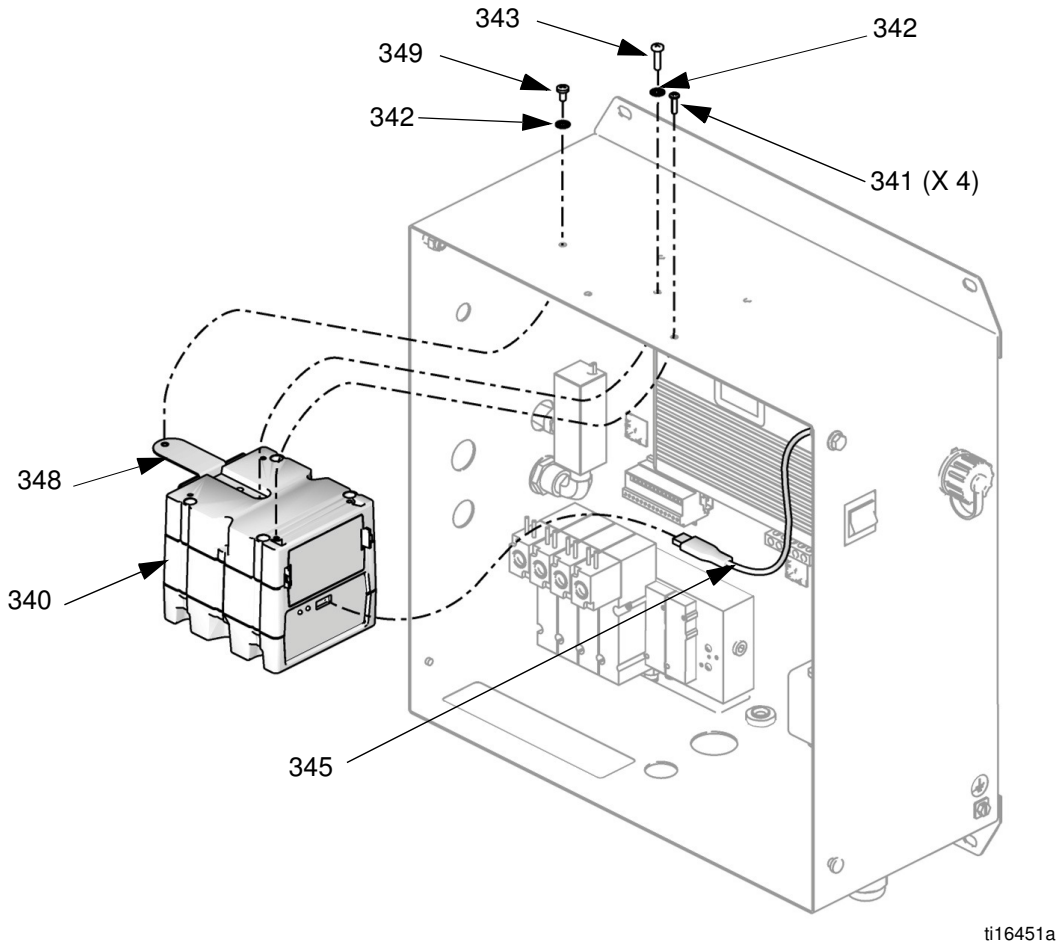


FIG. 16. Replace USB Module

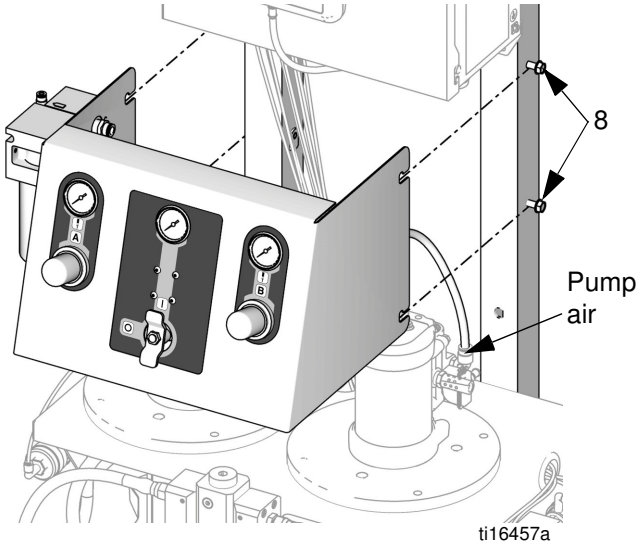
Pump System Air Controls

Remove Air Control Assembly

1. Follow **Before Servicing**, page 13.
2. See FIG. 17. Disconnect pump air lines, main air line, and solenoid air line.

NOTE: You may prefer to remove the A side air motor air line after you remove the assembly from the frame.

3. Loosen four screws (8) from sides of frame. Slide the assembly up and out to remove.
4. Follow steps in reverse order to reinstall air control assembly after repair.



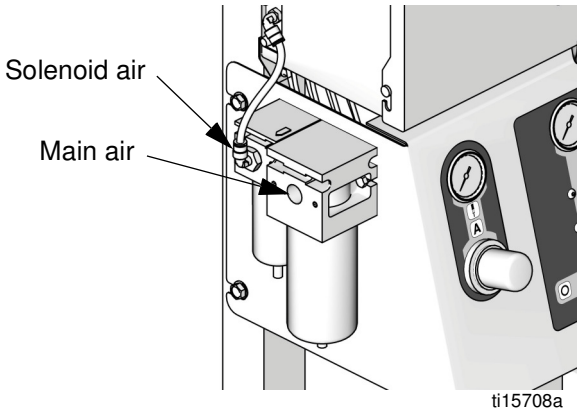


FIG. 17. Remove Air Control Assembly

Replace Pressure Gauge(s)

1. See **Remove Air Control Assembly**, page 22.

See FIG. 18, page 23, for a full diagram of the pump air controls.

2. Disconnect air lines to gauges (203).
3. Remove mounting screws (203a).
4. Remove fittings (211) and gauges (203). Replace as needed.
5. Follow steps in reverse order to reassemble.

Replace Air Regulators

1. See **Remove Air Control Assembly**, page 22.
2. See FIG. 18, page 23. Remove regulator nut (205) and disconnect air lines running to regulator (204).
3. Remove regulator assembly and replace with new. See **Air Controls, Pump-Based Models 24F088-24F115**, page 35.
4. Follow steps in reverse order to reassemble.

Replace Manifold/Ball Valve/Safety Valve

1. See **Remove Air Control Assembly**, page 22.
2. See FIG. 18, page 23. Remove nut (202b) and handle (202a) from front of air control plate.
3. Remove four screws (222) from front of air control plate.
4. Disconnect all air lines.
5. Disconnect fittings (207, 212, 214, 215). Replace as necessary.
6. Disconnect ball valve (202) and safety valve (219). Replace parts as necessary, including manifold. See **Air Controls, Pump-Based Models 24F088-24F115**, page 35.
7. Follow steps in reverse order to reassemble.

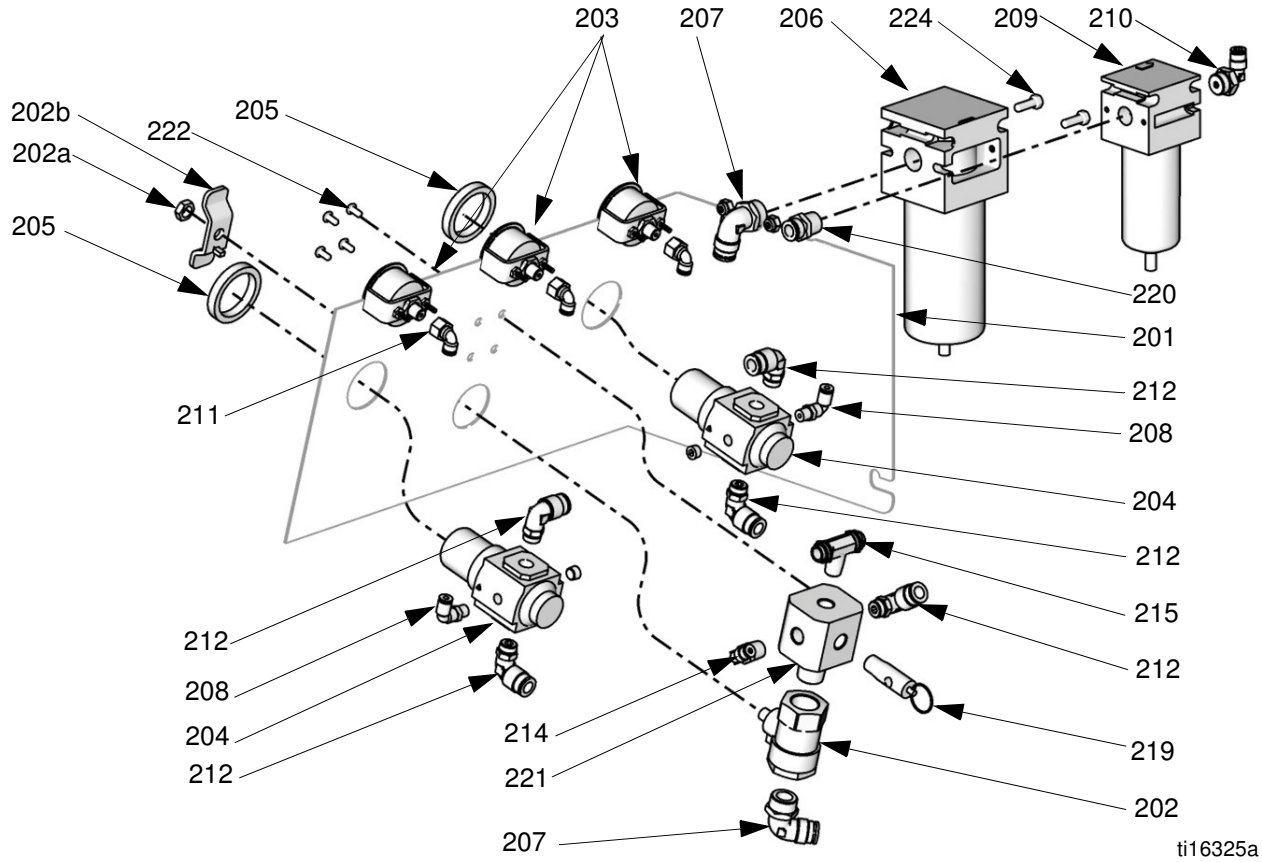
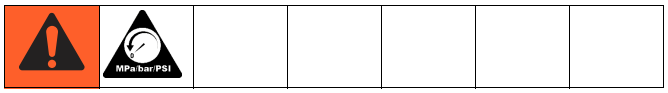


FIG. 18. Air Controls, Pump System

Meter System Air Controls



Remove Air/Fluid Panel

1. Follow **Before Servicing**, page 13.
2. Disconnect main air line and solenoid air line. Disconnect fluid lines where they enter the valve stacks.
3. Remove four screws (8) from sides of frame.
4. Remove air/fluid panel assembly.
5. Follow steps in reverse order to reinstall assembly after repair.

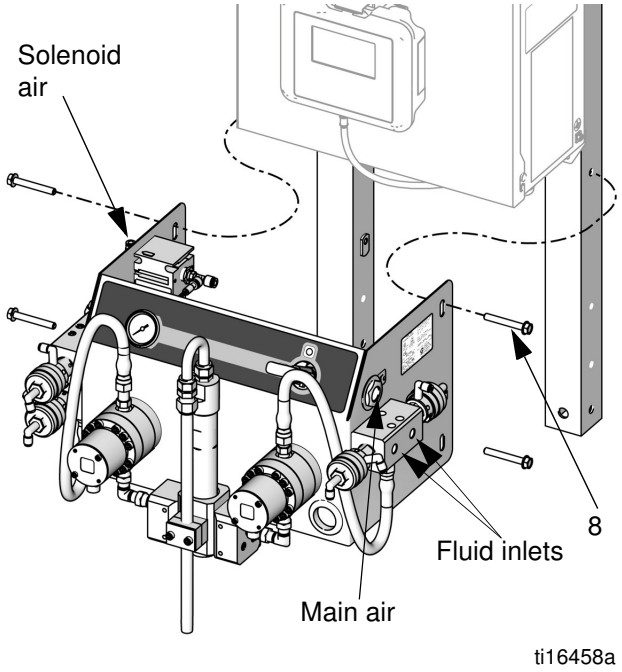


FIG. 19. Remove Air/Fluid Panel

Replace Ball Valve

1. See **Remove Air/Fluid Panel**, page 23.
2. Remove screw (106b) and washer (106c) from the handle on the front of the panel.
3. Remove fittings (113, 114, 121, 122) and ball valve (106).
4. Replace fittings and/or valve as needed.
5. Follow steps in reverse order to reassemble.

Replace Pressure Gauge(s)

1. See **Remove Air/Fluid Panel**, page 23.
2. Disconnect air line to gauge (105).
3. Remove mounting screws (105a).
4. Remove fitting (114) and gauge (105). Replace as needed.
5. Follow steps in reverse order to reassemble.

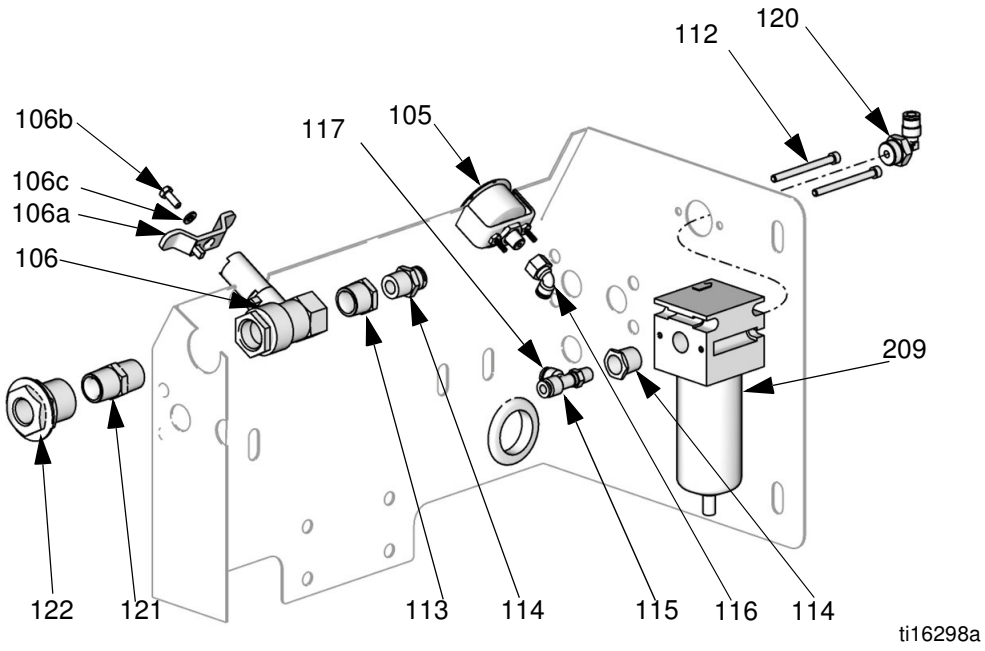


FIG. 20. Air Controls, Meter System

Fluid Controls

Remove Dosing Valve Stacks

1. Follow **Before Servicing**, page 13.
2. **Meter-based systems:** See **Remove Air/Fluid Panel**, page 23.
3. **Pump-based systems:** On inside of panel, remove fluid inlet hose (37). Remove fluid outlet pressure sensor (6). Disconnect fluid fitting (5) from dosing valve stacks (4, 108 if 3-color system). Disconnect fluid outlet lines from fitting (710). Disconnect solvent supply hose from inlet.

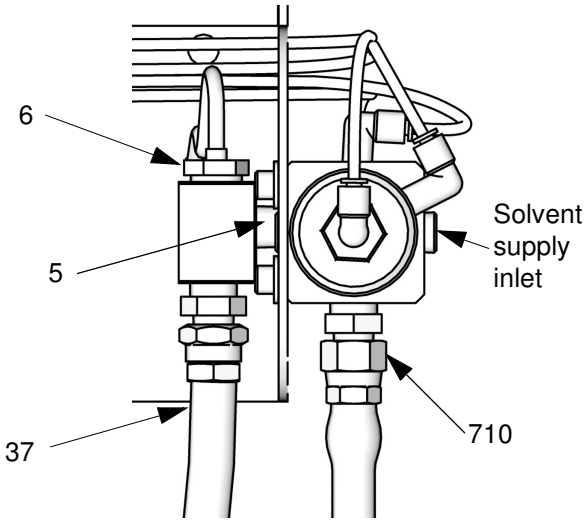


FIG. 21. Disconnect fluid lines

4. **Meter-based systems:** Disconnect fluid inlet lines from valve stacks. See **FIG. 22.**
5. Remove four bolts (52) and washers (53) from inside the panel to remove each valve stack (4, 108 if 3-color system).

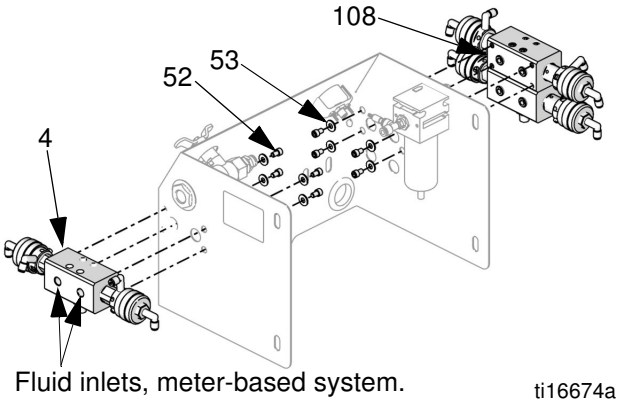


FIG. 22. Remove valve stacks

6. **3-Color System.** Remove four bolts (711) from top of valve stack. Separate the two manifolds (701 and 706).
7. **Replace Seat(s):** To replace a seat on a single valve, order Kit 16A560 (see page 49). Remove dosing valve (705) from manifold (701 or 706), then remove and replace seat (703) and o-rings (702 and 704).
8. **Service Dosing Valve:** Order Kit 15U933 (see page 49). Follow all instructions and warnings in manual 312782 to rebuild the dosing valve.
9. **Valve Manifold Rebuild:** For full service of your valve stack (1-color or 3-color), order Kit 24H254 (see page 49). Follow directions in **Dosing Valve Manifold Rebuild**, page 26.

Dosing Valve Manifold Rebuild

Order Kit 24H254 (see page 49). Use all parts in the kit.

1. Follow Steps 1 - 5 in **Remove Dosing Valve Stacks**, page 25.
2. Remove fitting (710) and o-ring (708).
3. Remove the dosing valve (705), then remove seat (703) and o-rings (702 and 704) from each side of each manifold (701, 706).
4. **3-Color Systems.** Remove the spacer (707) and o-rings (708 and 709) from between the two manifolds (706).
5. **3-Color Systems.** Install new o-ring (708) on fitting (710). Install fitting on bottom of 3-color manifold (701).

NOTE: Relieve spring tension prior to installing the valve (705) into the manifold (701 or 706).

6. Install the small o-ring (702), the seat retainer (703) and the large o-ring (704) into the manifold, then install the valve (705). Torque to 35-40 ft-lb (47-54 N•m). Repeat for each valve.
7. **3-Color Systems.** Install new o-ring (708) on the spacer (707). Install new o-ring (709) on the bottom of the 1-color manifold (706). Align manifolds (701 and 706). Install four screws (711). Torque to 8-10 ft-lb (11-14 N•m).
8. Use four bolts (52) and washers (53) to reattach the valve stacks (4, 108 if present).
9. Reconnect fluid lines. See FIG. 21, page 25.
10. Reconnect air lines. See System Pneumatic Schematic, pages 52- 53. See also the **Tubing Chart and Diagrams**, page 36 for pump-based systems or page 41 for meter-based systems.

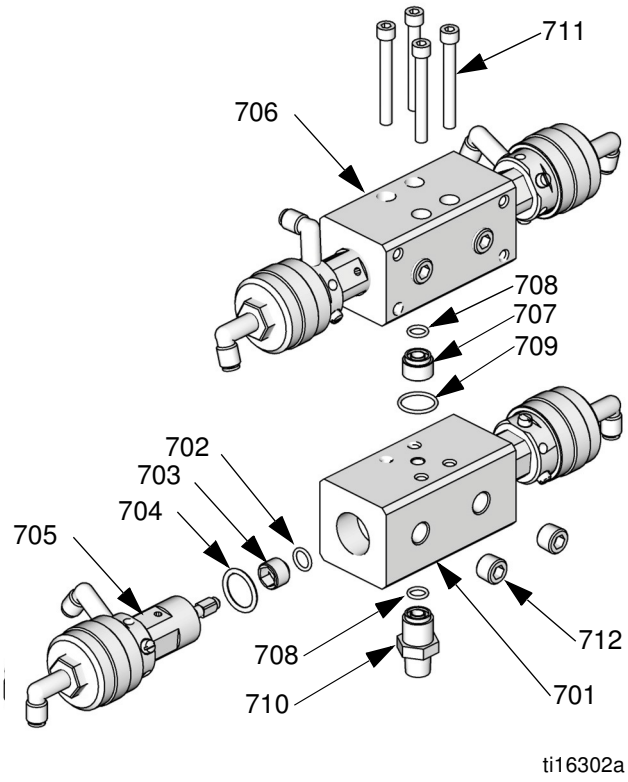


FIG. 23. Rebuild Dosing Valve Stacks

Repair Flow Meters

Coriolis Meter

1. Follow **Before Servicing**, page 13.
2. To remove and service the Coriolis meter, see manual 313599.

G3000 Meter

Removal

1. Follow **Before Servicing**, page 13.
2. Remove cable harness (118) and fluid lines.
3. Remove two screws (110) and washers (109) holding the meter (103) and the spacer (104) to the fluid plate (101).
4. Service meter as instructed in the meter manual 308778.

Installation

1. Secure meter (103) and spacer (104) to the fluid plate (101) with screws (110) and washers (109).
2. Connect cable harness (118) and fluid line.
3. Calibrate meter as instructed in the Operation manual 3A0869.

Repair Mix Manifold

1. Follow **Before Servicing**, page 13.
2. See FIG. 25, page 28. Disconnect fluid lines.
3. Holding onto the mix manifold (13), remove four screws (52) and washers (53) that hold the mix manifold (13) to the fluid plate (101, meter systems) or to the pump frame (pump systems). Remove the manifold.
4. Service mix manifold as instructed in Mix Manifold manual 312781.

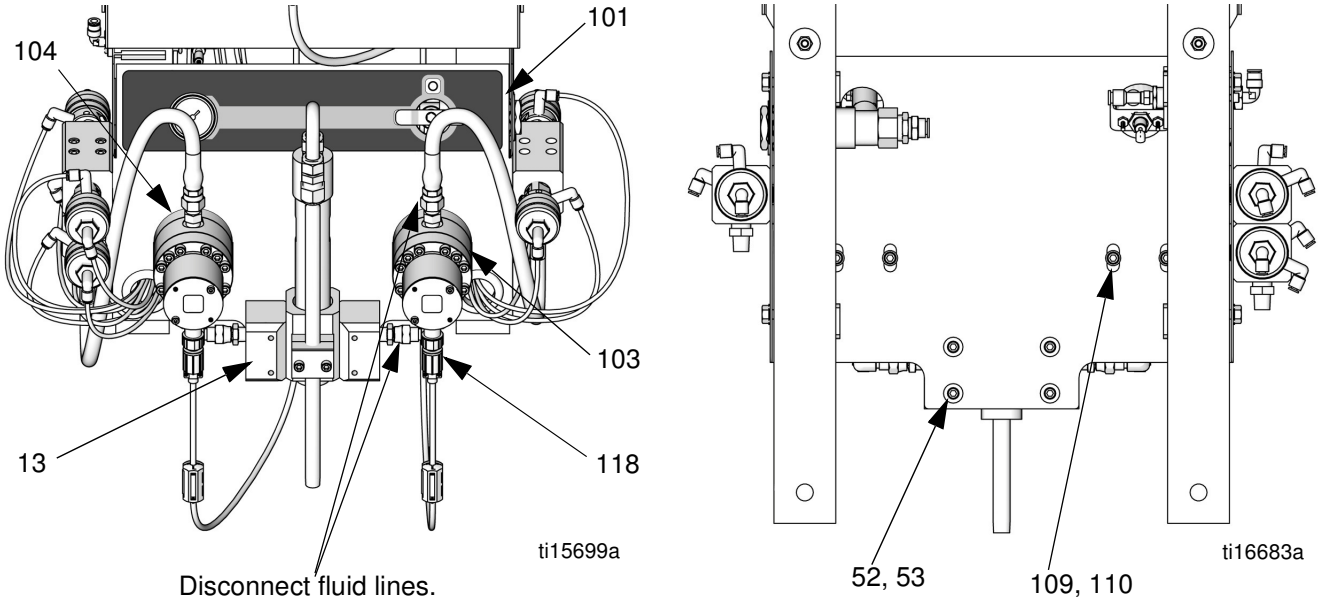


FIG. 24. Meter System Manifold Removal

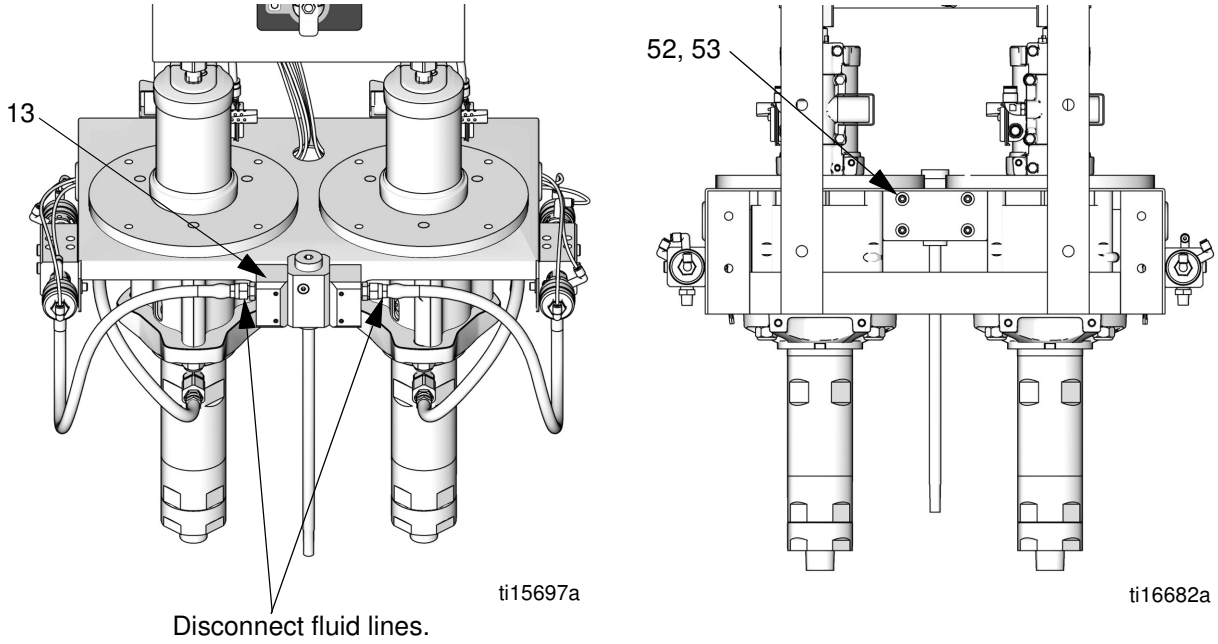


FIG. 25. Pump System Manifold Removal

Pump Assembly

Prior to service, remove the displacement pump first, then the air motor.

Remove the Displacement Pump

See pages 30-31 for detailed illustration.

1. Follow **Pressure Relief Procedure**, page 9.
2. Disconnect the fluid line from the pump outlet. See FIG. 26.
3. **Merkur Pumps:** Remove the tie rod shield (26). **Merkur Bellows Pumps:** Remove the coupler shield (79).
4. **Merkur Pumps:** Hold the flats of the air motor shaft with a wrench. Use another wrench to loosen the coupling nut (16).
   Merkur Bellows Pumps: Hold the coupling nut (16) with a wrench. Use another wrench to turn the motor shaft. To avoid damage to the bellows top cap and the D-shaped seal, **do not turn the coupling nut.**

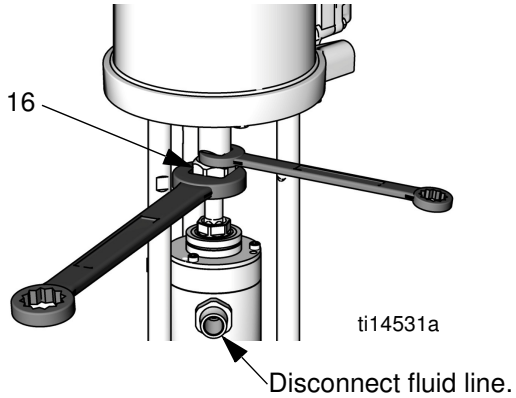


FIG. 26. Loosen the coupling nut

5. Lower the coupling nut (16) enough to remove the coupling collars (15), and then lift up the motor shaft and remove the coupling nut (16).

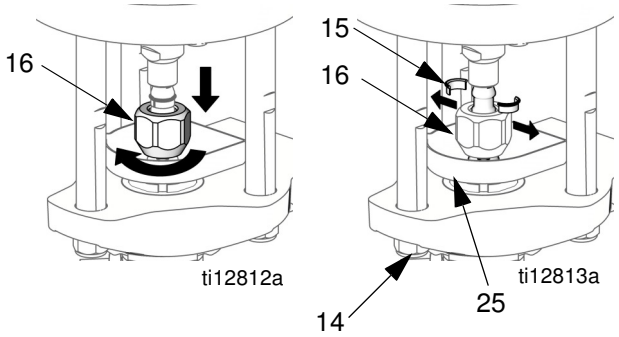


FIG. 27. Remove the coupling collars

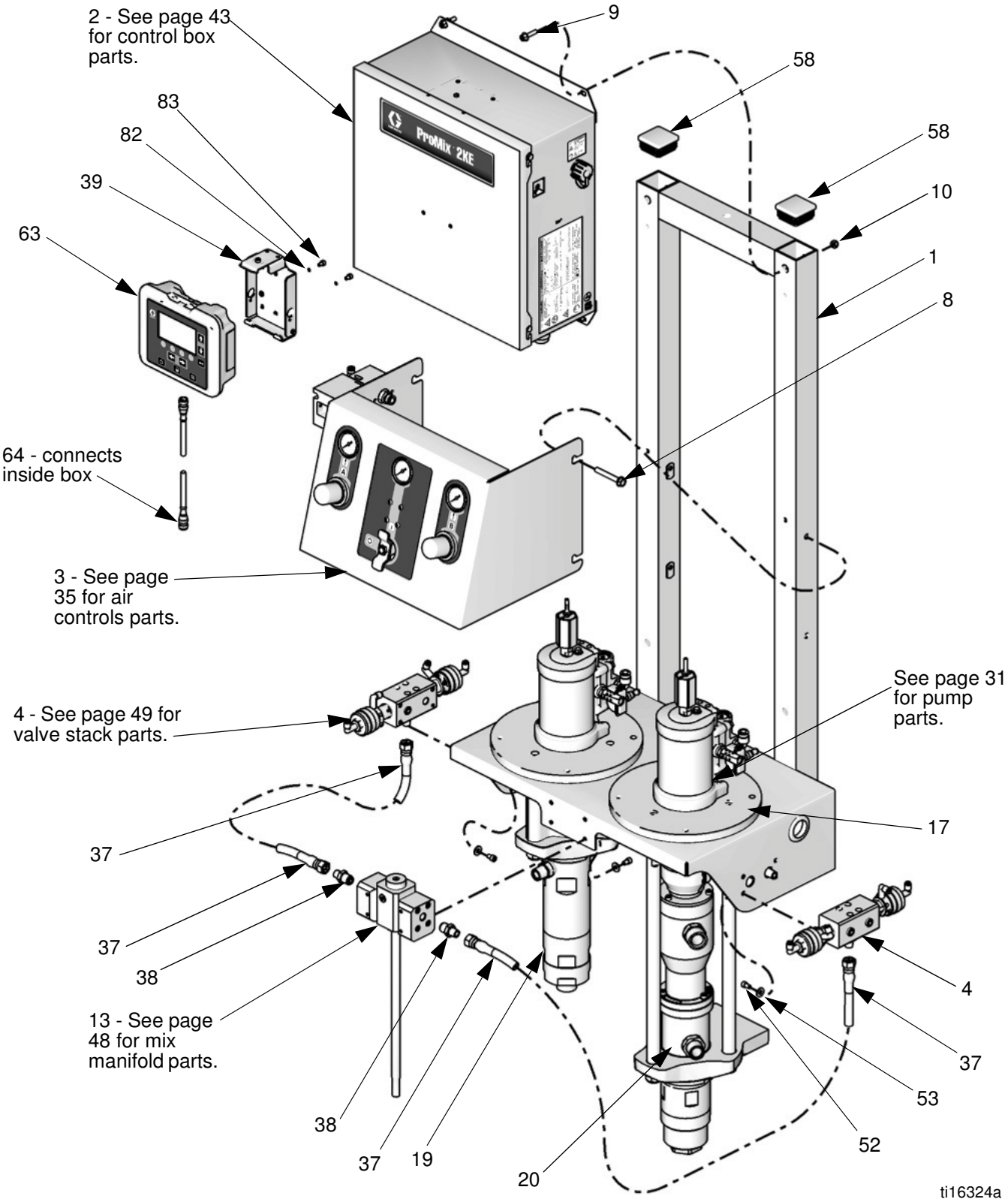
6. **Merkur Pumps:** Pull up on the TSL reservoir (25) to remove.
7. Use a socket to remove the tie rod nuts (14).
8. Carefully remove the displacement pump, with the pump adapter attached.
9. Clamp the adapter plate in a vise to service the displacement pump.
10. See your displacement pump manual (312792 for Merkur standard or 312793 for Merkur bellows) for service and parts information.

Remove the Air Motor

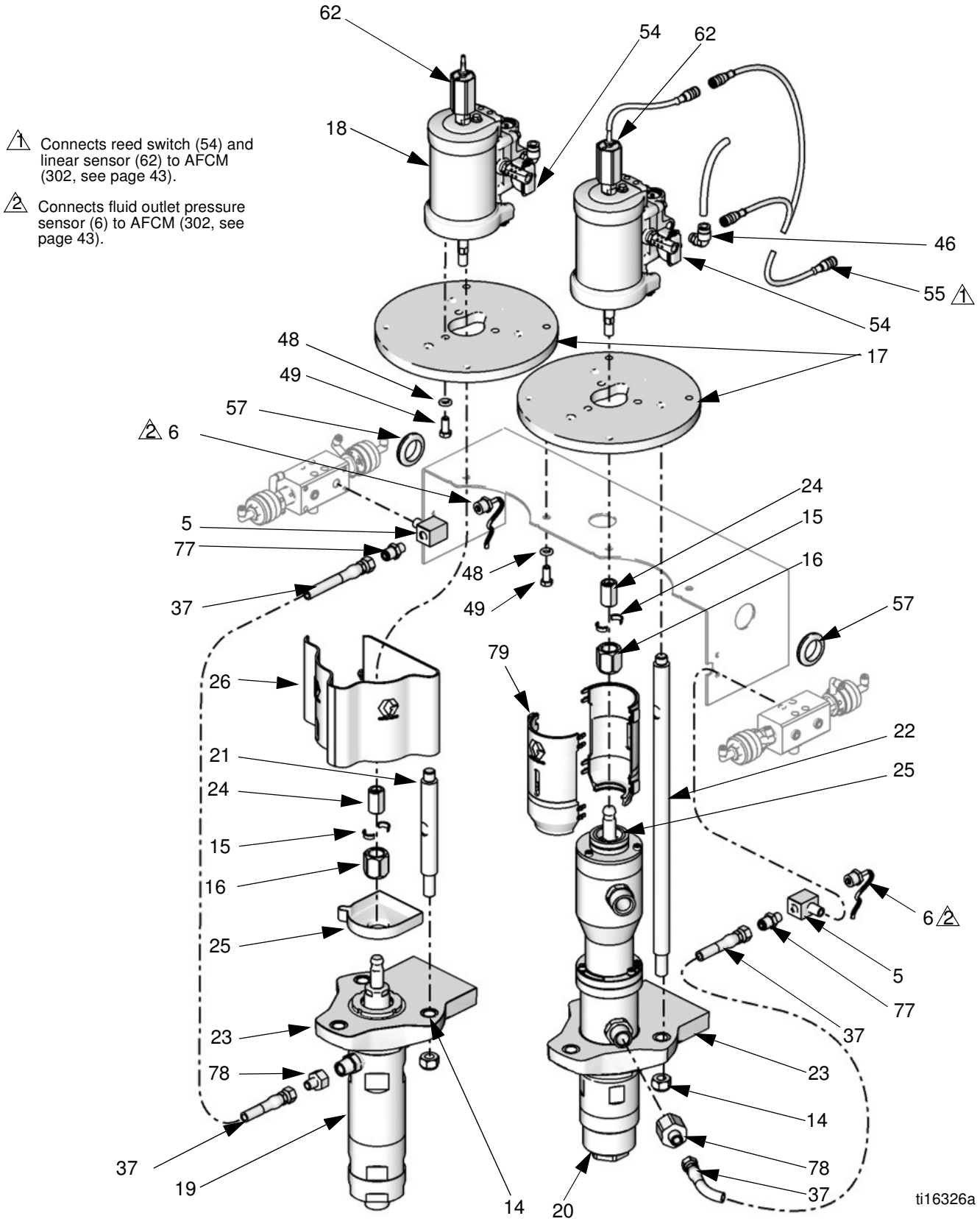
1. Follow **Pressure Relief Procedure**, page 9.
2. Follow **Remove the Displacement Pump**, page 29.
3. Disconnect air lines, the reed switch CAN cable, and the linear sensor cable.
4. Remove four screws (8) then remove the air control panel (3). See **Remove Air Control Assembly**, page 22.
5. Remove four mounting screws (49) and washers (48) from the under side of the pump frame.
6. **Systems with M02LH0 air motor (2.5 in.):** Remove three screws (49) and washers (48), then remove the adapter plate (17) from the bottom of the air motor.
7. Carefully lift the air motor up and out. Leave the tie rods and muffler attached or remove them, as you prefer.

Parts

Pump-Based Proportioners, Models 24F088-24F115



Pumps


1 Connects reed switch (54) and linear sensor (62) to AFCM (302, see page 43).
2 Connects fluid outlet pressure sensor (6) to AFCM (302, see page 43).
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Pump-Based Models 24F088-24F115

Ref.	Part	Description	Qty.
1	-----	FRAME	1
2	-----	CONTROL BOX, see page 43, Refs. 301-339	1
3	-----	CONTROLS, air; see page 35, Refs. 201-226	1
4	-----	VALVE, stack, 1 color/1 solvent; see page 49, Refs. 702-706, 708, and 710	2
5	16F164	FITTING, pressure sensor, fluid outlet	2
6	15M669	SENSOR, pressure, fluid outlet	2
8	-----	SCREW, machine, serrated flange, hex head, 5/16-18 x 2.25 in.	4
9	112547	SCREW, flange, hex head, 1/4-20	4
10	109478	NUT	4
13	262399	MIX MANIFOLD, dynamic dosing, see page 48, Refs. 601-632	1
14	15U606	NUT, lock, m16 x 2	6
15	184128	COLLAR, coupling	4
16	15T311	NUT, coupler	2
17	16F249	ADAPTER, plate, see Table, page 34	2
18	 M02LH0 M12LN0 M18LN0	AIR MOTOR, Merkur, see Table, page 34, see manual 312796 for repair/parts 2.5 in. (M02xxx) with linear sensor 6.0 in. (M12xxx) with linear sensor 7.5 in. (M18xxx) with linear sensor	2
19	 LW050A LW075A LW100A LW125A LW150A	DISPLACEMENT PUMP A, see Table, page 34, see manual 312792 for repair/parts Merkur, 50cc Merkur, 75cc Merkur, 100cc Merkur, 125cc Merkur, 150cc	1
20	 LB100B LB150B LW050A LW075A LW100A LW125A LW150A	DISPLACEMENT PUMP B, see Table, page 34, see manual 312793 for repair/parts Merkur Bellows with u-cup, 100cc Merkur Bellows with u-cup, 150cc Merkur, 50cc Merkur, 75cc Merkur, 100cc Merkur, 125cc Merkur, 150cc	1
21	15M662	ROD, tie, pump A	3
22	 15M662 15U691	ROD, tie, pump B Merkur pump Merkur Bellows pump	3
23	See Table	ADAPTER, displacement pump	1
24	16G463	COUPLING, adapter; see Table, page 34	2
25	See Table	RESERVOIR, tsl	1
26	24A959	SHIELD, tie rod	1
27	-----	USB MODULE, see page 44, Refs. 340-347	
37	 206966 239083	HOSE, coupled 3:1, 23:1, and 30:1 systems 45:1 systems	4
38	166421	FITTING, pipe	2
39	277853	BRACKET, mounting, display module	1
40▲	15X214	LABEL, warning, USB, not shown	1
45	105335	SCREW, machine, pan head, M4 x 0.7, for tie rod guard, not shown	1

Ref.	Part	Description	Qty.
46		ELBOW, air inlet	2
	115841	M02xxx air motors	
	C38211	All other air motors	
47	15T632	KIT, Air Flow Switch, see page 50, Refs. 900-904, not used on 45:1 systems	1 or 2
48	100133	WASHER, lock	
		M02xxx air motors	14
		All other air motors	8
49	100680	SCREW, cap, hex hd	
		M02xxx air motors	14
		All other air motors	8
51	101970	PLUG, pipe, hdls, not shown	4
52	C19798	SCREW, cap, socket head	12
53	100527	WASHER, plain	12
54	24A032	SWITCH, reed assembly	2
55	16E917	CABLE, IS and reed	2
57	120685	GROMMET	3
58	115313	PLUG, tube	2
62		KIT, LINEAR SENSOR, IS; includes sensor, fitting, magnet with holder, and o-ring	2
	24G849	M02xxx air motor	
	24G848	All other air motors	
63	16E883	MODULE, display	1
64	123278	CABLE, CAN, IS, yel m std x f rev.	1
66	-----	ELECTRIC POWER ASSEMBLY, Models 24F088-24F101, see page 45, Refs. 401-411	1
67	-----	ALTERNATOR POWER ASSEMBLY, Models 24F102-24F115, see page 46, Refs. 501-517	1
68▲	15W776	LABEL, warning, not shown	1
77	156971	FITTING, nipple, short	2
78		ADAPTER	2
	16H491	M02xxx air motor	
	512351	All other air motors	
79	24A640	SHIELD, Bellows	2
82	111307	WASHER, shipped loose, for Display Module	2
83	121224	SCREW, shipped loose, for Display Module	2
84	16G475	MAGNET, with holder	2
87	16F793	CARD, alarm/icon, not shown	1
325▲	15W598	LABEL, warning	1

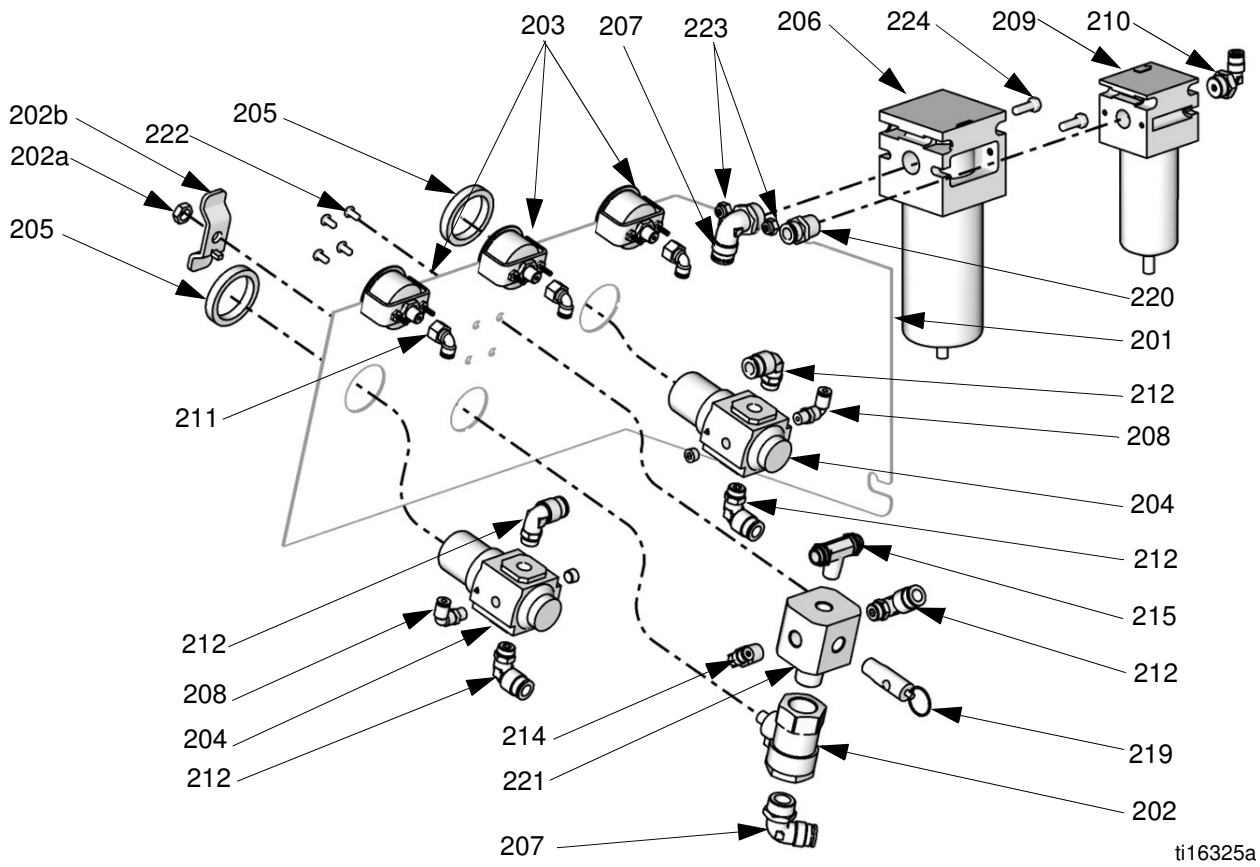
--- *Not sold separately.*

▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

Parts that Vary by Model, Pump-Based

Model		Adapter Plate (Item 17)	Air Motor (Item 18)	"A" Lower (Item 19)	"B" Lower (Item 20)	"A" Tie Rod (Item 21)	"B" Tie Rod (Item 22)	Lower Adapter (Item 23)	Coupling (Item 24)	TSL Reservoir (Item 25)
Non-IS	IS									
24F088	24F102	16F249	M02LH0	LW125A	LW125A	15M662	15M662	15T394	16G463	24A627
24F089	24F103	-----	M12LN0	LW100A	LW100A	15M662	15M662	15T393	-----	24A626
24F090	24F104	-----	M12LN0	LW075A	LW075A	15M662	15M662	15T392	-----	24A625
24F091	24F105	-----	M12LN0	LW050A	LW050A	15M662	15M662	15T391	-----	24A622
24F092	24F106	16F249	M02LH0	LW150A	LB150B	15M662	15U691	15T395	16G463	24A628
24F093	24F107	-----	M12LN0	LW100A	LB100B	15M662	15U691	15T393	-----	24A626
24F094	24F108	-----	M18LN0	LW100A	LB100B	15M662	15U691	15T393	-----	24A626
24F095	24F109	16F249	M02LH0	LW125A	LW125A	15M662	15M662	15T394	16G463	24A627
24F096	24F110	-----	M12LN0	LW100A	LW100A	15M662	15M662	15T393	-----	24A626
24F097	24F111	-----	M12LN0	LW075A	LW075A	15M662	15M662	15T392	-----	24A625
24F098	24F112	-----	M12LN0	LW050A	LW050A	15M662	15M662	15T391	-----	24A622
24F099	24F113	16F249	M02LH0	LW150A	LB150B	15M662	15U691	15T395	16G463	24A628
24F100	24F114	-----	M12LN0	LW100A	LB100B	15M662	15U691	15T393	-----	24A626
24F101	24F115	-----	M18LN0	LW100A	LB100B	15M662	15U691	15T393	-----	24A626

Air Controls, Pump-Based Models 24F088-24F115



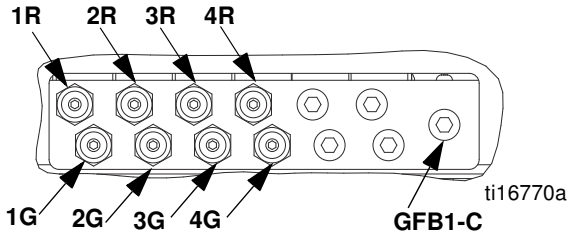
Ref.	Part	Description	Qty.
201	-----	PLATE, air controls	1
202	110225	VALVE, vented, 2-way	1
202a	-----	HANDLE	1
202b	-----	NUT, handle	1
202c	290167	TAG, warning, not shown	1
203	15T500	GAUGE, air pressure	3
203a	-----	SCREW, mounting, gauge	6
204	116513	REGULATOR, air	2
205	116514	NUT, air regulator	2
206	15D795	FILTER, air	1
206a	15D890	ELEMENT, 40 micron	1
207	-----	ELBOW, male	2
208	15T866	ELBOW, swivel, 1/8 npt x 5/32 T	2
209	114124	FILTER, air	1
209a	15D909	ELEMENT, 5 micron	1

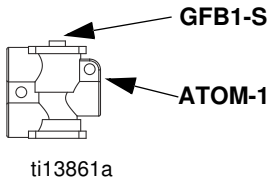
Ref.	Part	Description	Qty.
210	114153	ELBOW	1
211	15T498	ELBOW	3
212	115841	ELBOW	5
214	114469	ELBOW	1
215	502524	CONNECTOR, tube	1
219	113498	VALVE, safety	1
220	114485	CONNECTOR, male, 3/8 npt	1
221	16F701	MANIFOLD, pump	1
222	551787	SCREW, cap	4
223	109478	NUT, lock	2
224	100022	SCREW, cap, hex	2

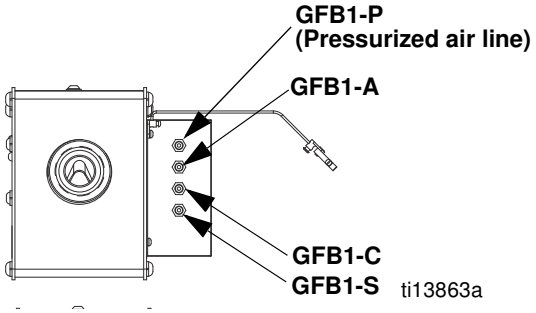
Tubing Chart, Pump-Based Models 24F088-24F115

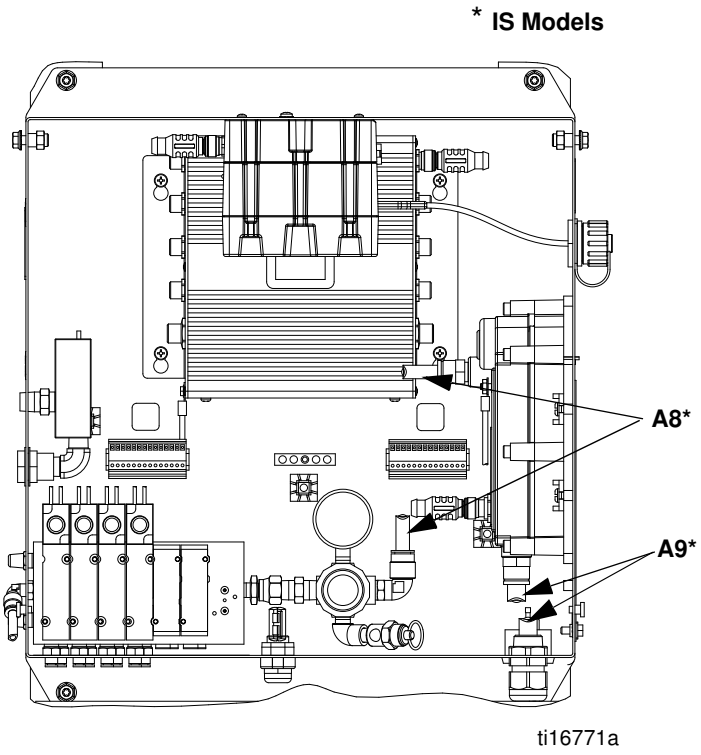
Type	Color	Description	Starting Point	Ending Point	Tube OD in. (mm)
Air	Green	Solvent Valve A On	1G	1G	0.156 (4.0)
Air	Green	Dose Valve A On	2G	2G	0.156 (4.0)
Air	Green	Solvent Valve B On	3G	3G	0.156 (4.0)
Air	Green	Dose Valve B On	4G	4G	0.156 (4.0)
Air	Red	Solvent Valve A Off	1R	1R	0.156 (4.0)
Air	Red	Dose Valve A Off	2R	2R	0.156 (4.0)
Air	Red	Solvent Valve B Off	3R	3R	0.156 (4.0)
Air	Red	Dose Valve B Off	4R	4R	0.156 (4.0)
Air	Natural	Solenoid Air	A1	A1	0.25 (6.3)
Air	Natural	Air Regulator to Pump B	A2	A2	0.375 (9.5)
Air	Natural	Air Regulator to Pump A	A3	A3	0.375 (9.5)
Fluid	----	Pump B to Valve Stack B	A4	A4	-----
Fluid	----	Pump A to Valve Stack A	A5	A5	-----
Fluid	----	Valve Stack A to Mix Manifold	A6	A6	-----
Fluid	----	Valve Stack B to Mix Manifold	A7	A7	-----
Air	Natural	Air Regulator to Alternator*	A8	A8	0.375 (9.5)
Air	Black	Alternator Air Exhaust*	A9	A9	0.5 (12.7)

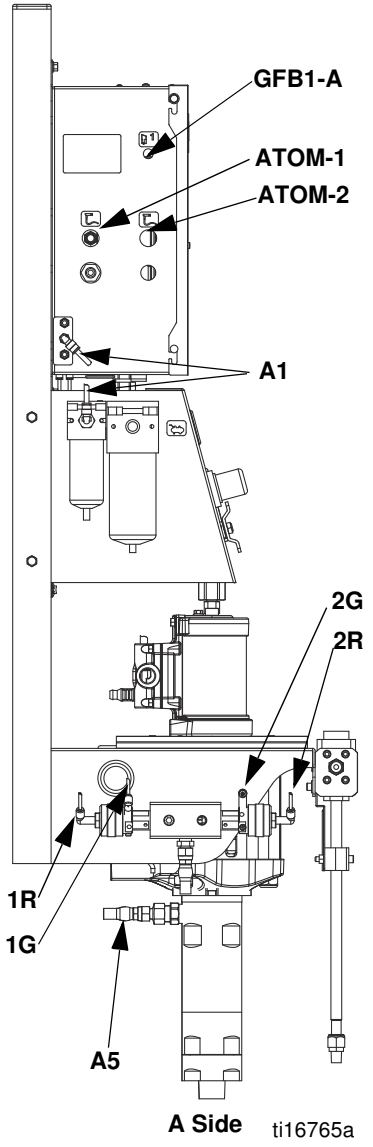
* *Used only on IS models.*











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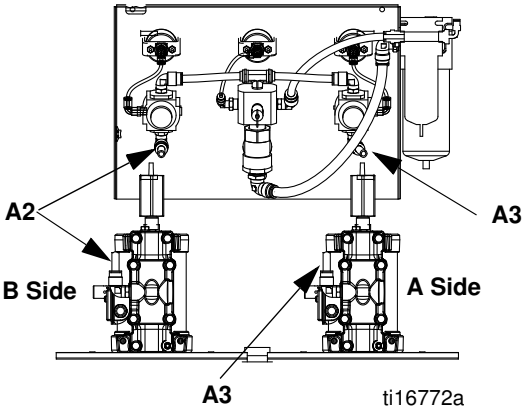

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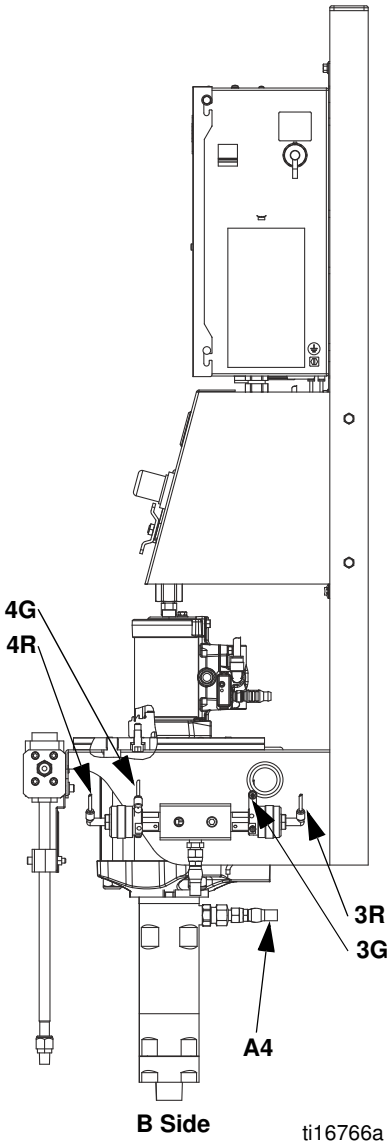

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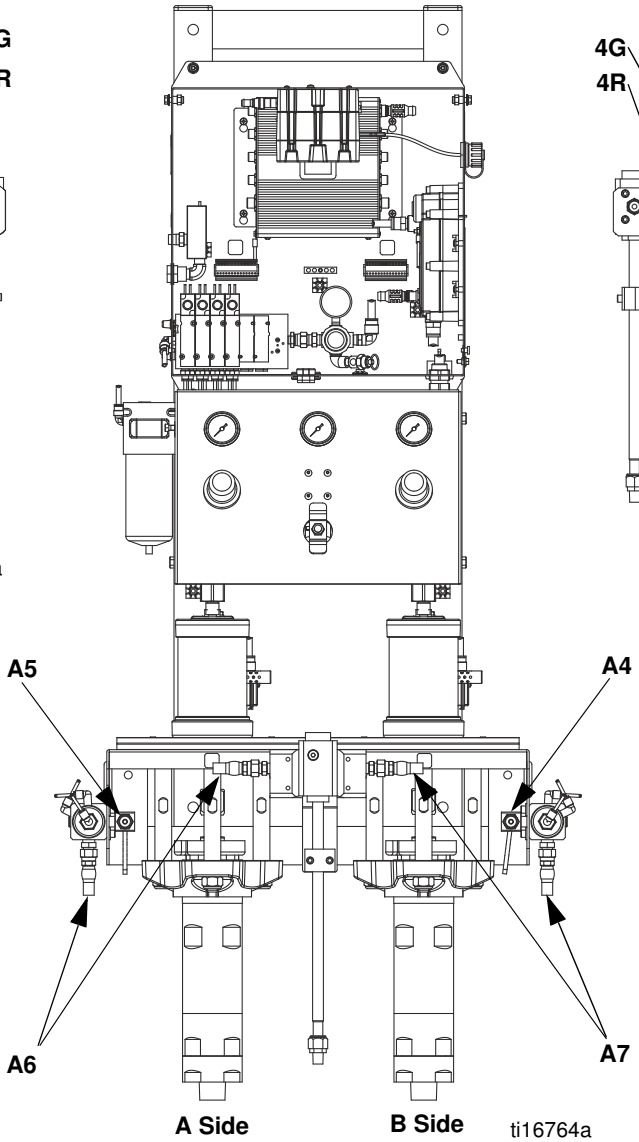

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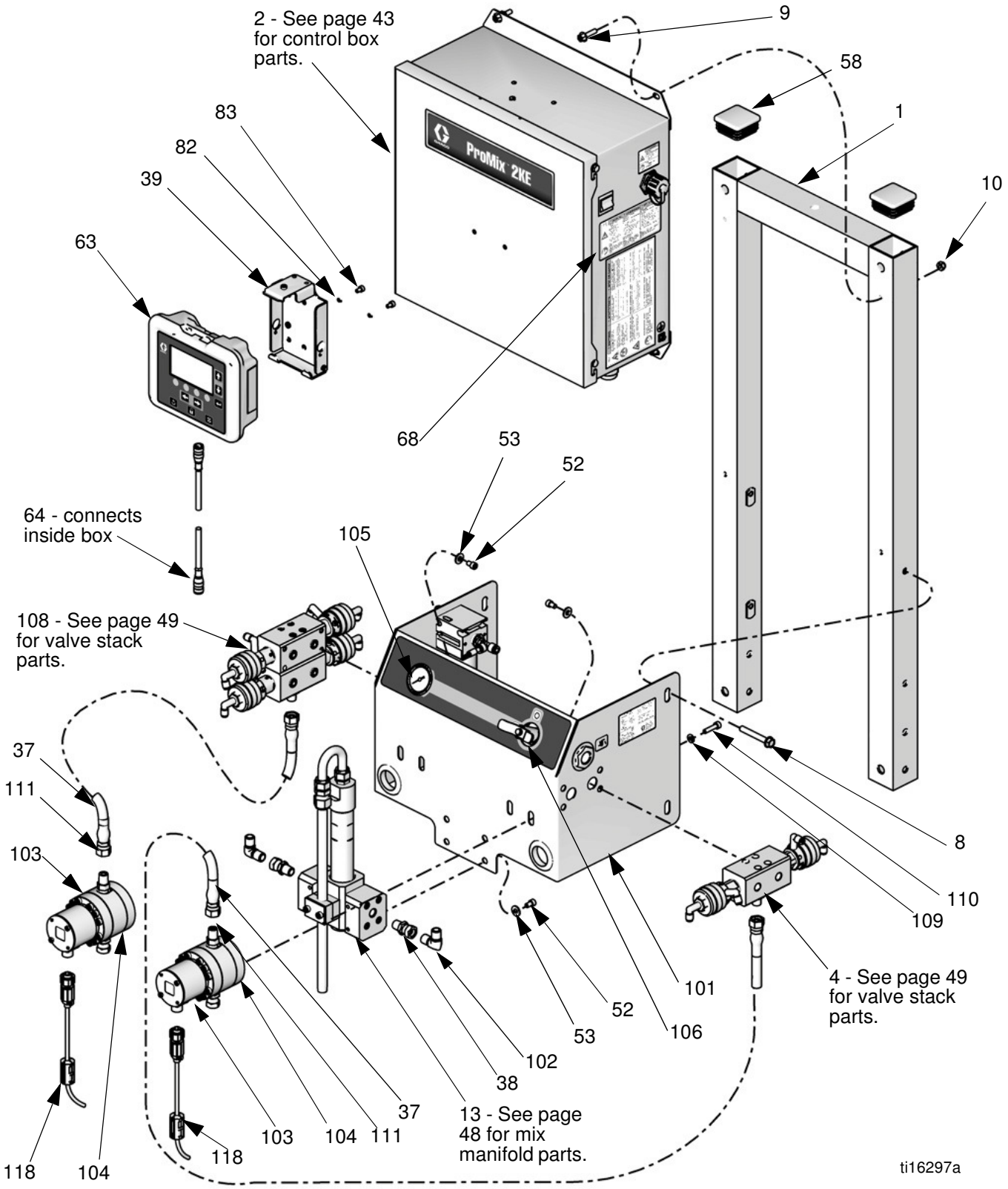
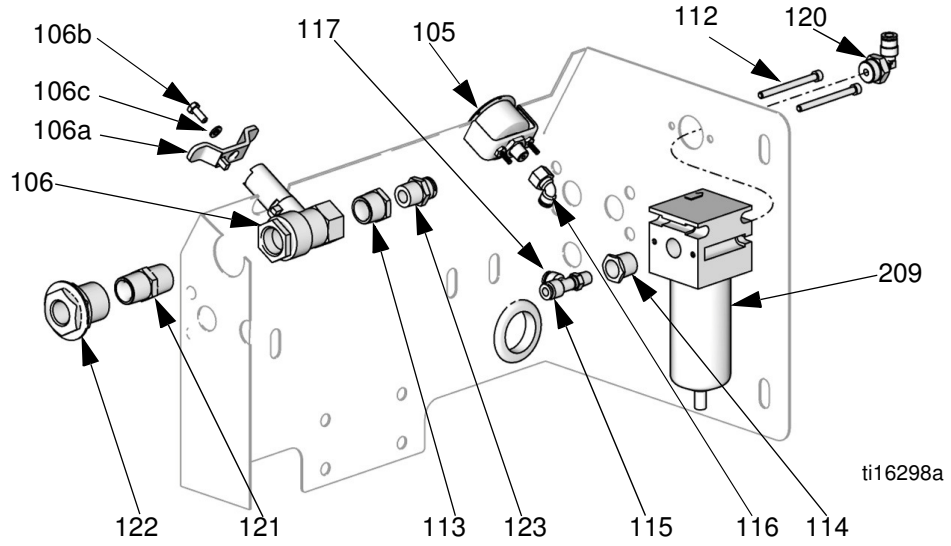
See Manual 312784 for full setup instructions for a gun flush box.

Meter-Based Proportioners, Models 24F080-24F087





Meter-Based Models 24F080-24F087

Ref.	Part	Description	Qty.
1	-----	FRAME, meter	1
2	-----	CONTROL BOX, see page 43, Refs. 301-339	1
4	-----	VALVE, stack, 1 color/1 solvent; see page 49, Refs. 702-706, 708, and 710 1-Color Models 3-Color Models	 2 1
8	-----	SCREW, machine, serrated flange, hex head, 5/16-18 x 2.25 in.	4
9	112547	SCREW, flange, hex hd	4
10	109478	NUT	4
13	262398	MIX MANIFOLD, sequential dosing, see page 48, Refs. 601-623	1
27	-----	USB MODULE, see page 44, Refs. 340-347	
35	117356	VALVE, solenoid (3-color models; see page 43)	2
37	206966	HOSE, coupled, 1.5 ft	2
38	114339	FITTING, union, swivel, 1/4 npt, sst	4
39	277853	BRACKET, mounting, display module	1
40▲	15X214	LABEL, warning, USB, not shown	1
47	15T632	KIT, Air Flow Switch, see page 50, Refs. 900-904	1 or 2
52	C19798	SCREW, cap, socket head	12
53	100527	WASHER, plain	12
57	120685	GROMMET	2
58	115313	PLUG, tube	2
63	16E883	MODULE, display	1
64	123278	CABLE, IS, CAN, yellow, m std x f rev.	1
66	-----	ELECTRIC POWER ASSEMBLY, Models 24F080-24F083, see page 45, Refs. 401-411	1
67	-----	ALTERNATOR POWER ASSEMBLY, Models 24F084-24F087, see page 46, Refs. 501-517	1
68▲	15W776	LABEL, warning	1
82	111307	WASHER, shipped loose, for Display Module	2
83	121224	SCREW, shipped loose, for Display Module	2
87	16F793	CARD, alarm/icon, not shown	1
90	16G607	BUSHING, strain relief	1
101	-----	PLATE, fluid	1
102	114342	ELBOW, 1/4-18 npsm	2
103	289813	METER, gear, G3000	2
104	16F063	SPACER, meter	2

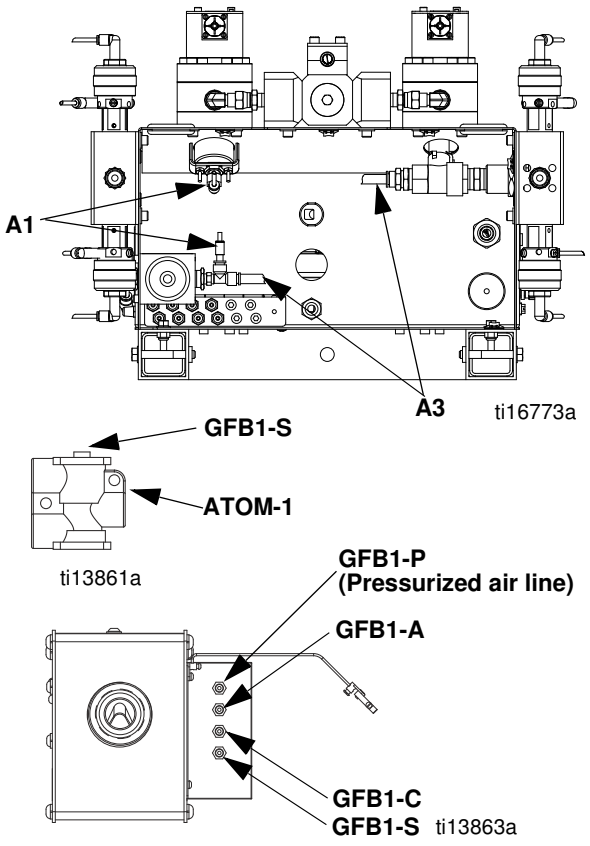
Ref.	Part	Description	Qty.
105	15T500	GAUGE, air pressure	1
105a	-----	SCREW, mounting, gauge	6
106	118762	VALVE, ball, vented, 1/2 in.	1
106a	-----	HANDLE, ball valve	1
106b	-----	SCREW	1
106c	-----	WASHER	1
108	-----	VALVE, stack, 3 clr/1 fl, see page 49, 3-Color Models only	1
109	100527	WASHER, plain	4
110	117029	SCREW, M6x25	4
111	501867	VALVE, check	2
112	107404	SCREW, cap, sockethead	2
113	100081	BUSHING, pipe	1
114	C19675	BUSHING, reducer	2
115	15T498	SWIVEL, 90°, 5/32T x 1/8 npt(f)	1
116	C20365	FITTING, tee	1
117	517312	CONNECTOR, male	1
118	258528	HARNESS, cable, w/connector, G3000	2
120	114153	ELBOW, male, swivel	1
121	158491	FITTING, nipple	1
122	512905	FITTING, bulkhead	1
123	114366	FITTING, tube	1
124	117793	HOLDER, tie	6
209	114124	FILTER, air, 3/8 npt, see page 51 for filter elements.	1
230	262028	TOOL KIT, installation	1
325▲	15W598	LABEL, warning	1

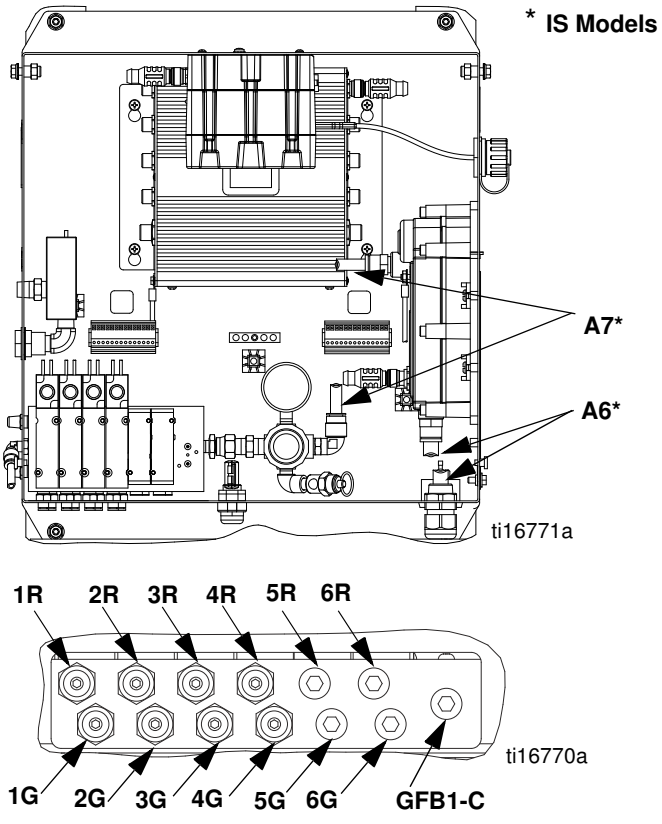
▲*Replacement Danger and Warning labels, tags, and cards are available at no cost.*

Tubing Chart, Meter-Based Models 24F080-24F087

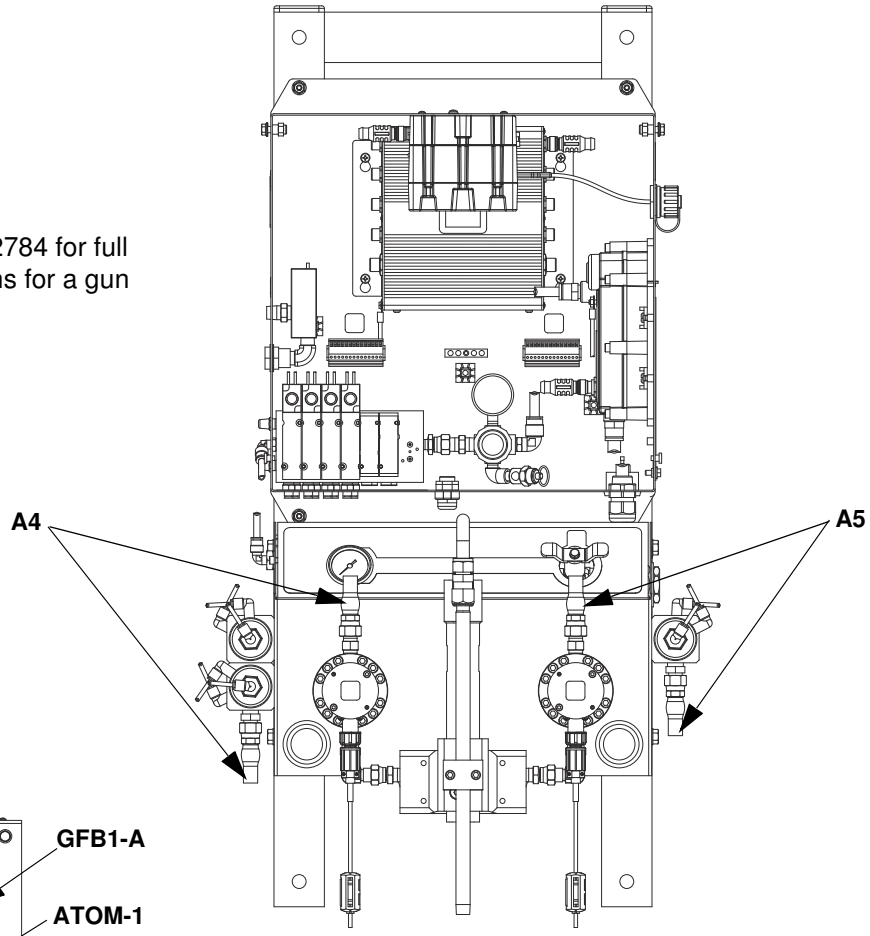
Type	Color	Description	Starting Point	Ending Point	Tube OD in. (mm)
Air	Green	Solvent Valve A On	1G	1G	0.156 (4.0)
Air	Green	Dose Valve A1 On	2G	2G	0.156 (4.0)
Air	Green	Solvent Valve B On	3G	3G	0.156 (4.0)
Air	Green	Dose Valve B On	4G	4G	0.156 (4.0)
Air	Green	Dose Valve A2 On	5G	5G	0.156 (4.0)
Air	Green	Dose Valve A3 On	6G	6G	0.156 (4.0)
Air	Red	Solvent Valve A Off	1R	1R	0.156 (4.0)
Air	Red	Dose Valve A1 Off	2R	2R	0.156 (4.0)
Air	Red	Solvent Valve B Off	3R	3R	0.156 (4.0)
Air	Red	Dose Valve B Off	4R	4R	0.156 (4.0)
Air	Red	Dose Valve A2 Off	5R	5R	0.156 (4.0)
Air	Red	Dose Valve A3 Off	6R	6R	0.156 (4.0)
Air	-----	Main Air to Pressure Gauge	A1	A1	0.156 (4.0)
Air	Natural	Solenoid Air	A2	A2	0.25 (6.3)
Air	Natural	Main Air to Filter	A3	A3	0.25 (6.3)
Fluid	-----	Valve Stack A to Meter A	A4	A4	0.375 (9.5)
Fluid	-----	Valve Stack B to Meter B	A5	A5	0.375 (9.5)
Air	Black	Alternator Air Exhaust*	A6	A6	0.5 (12.7)
Air	Natural	Air Regulator to Alternator*	A7	A7	0.375 (9.5)

* *Used only on IS models.*





See Manual 312784 for full setup instructions for a gun flush box.



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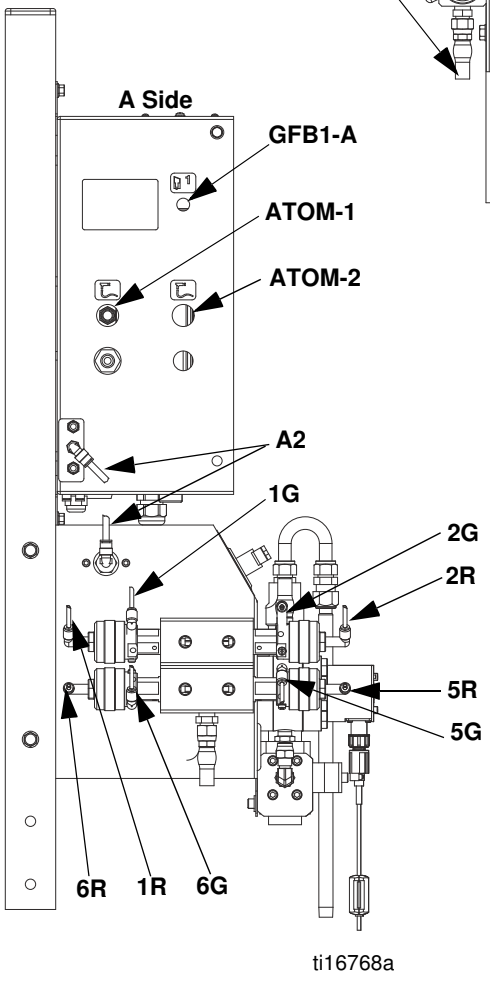

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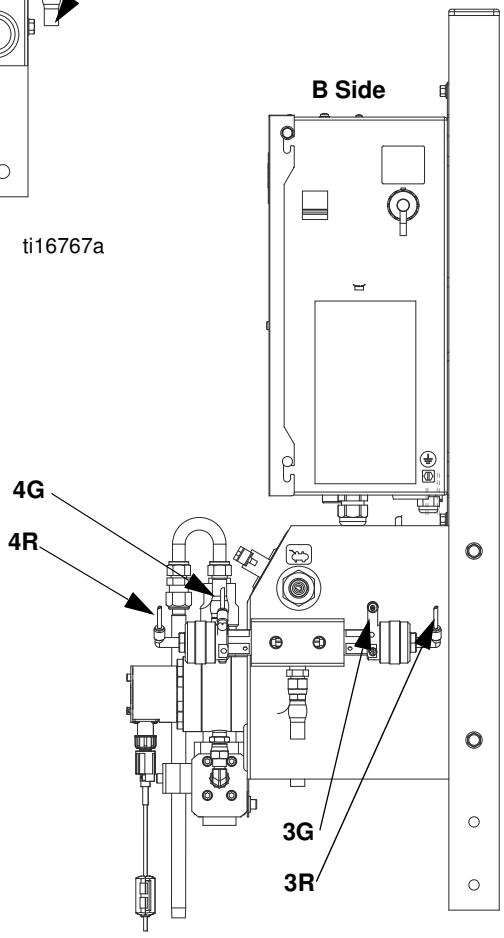

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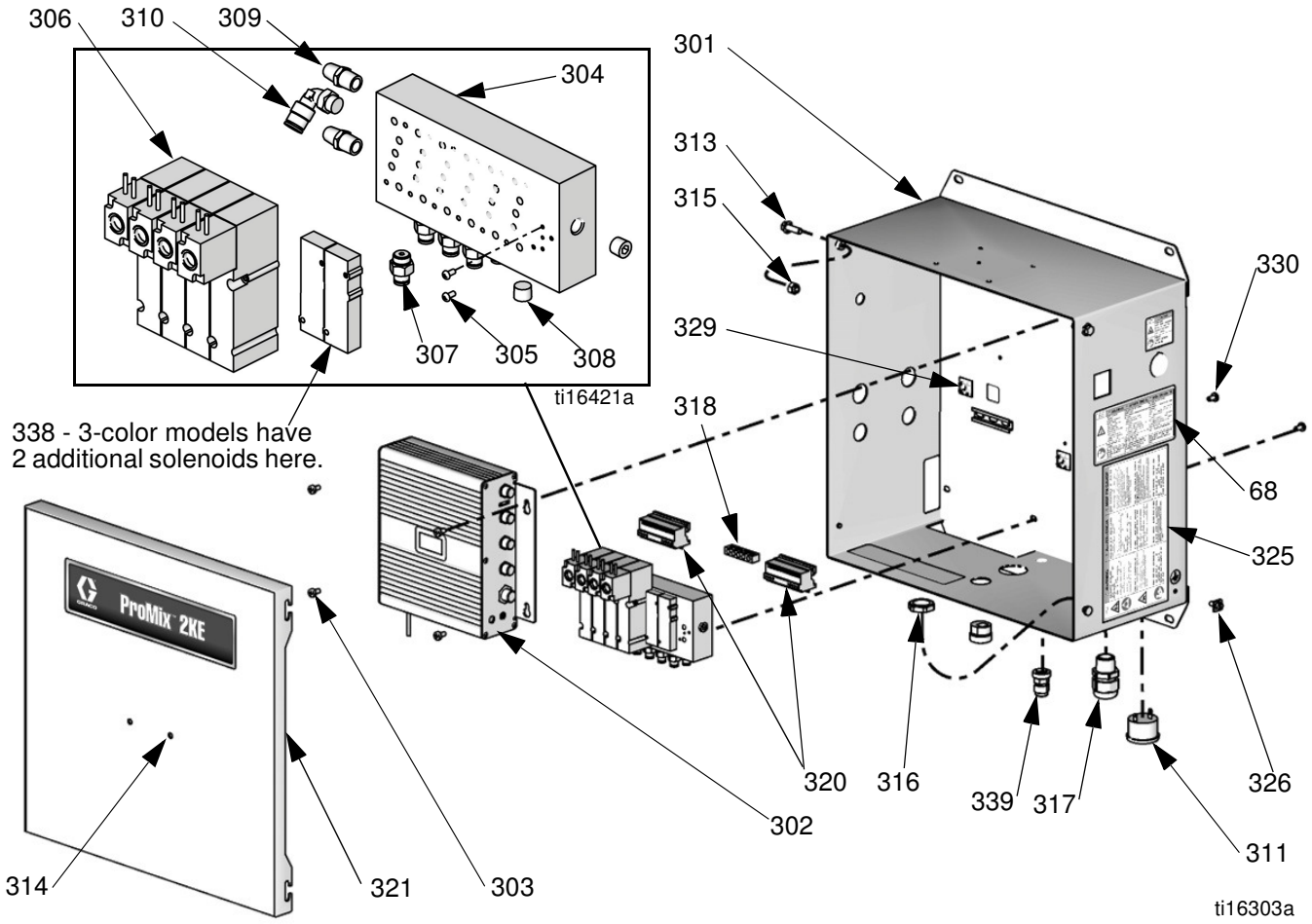
Control Box

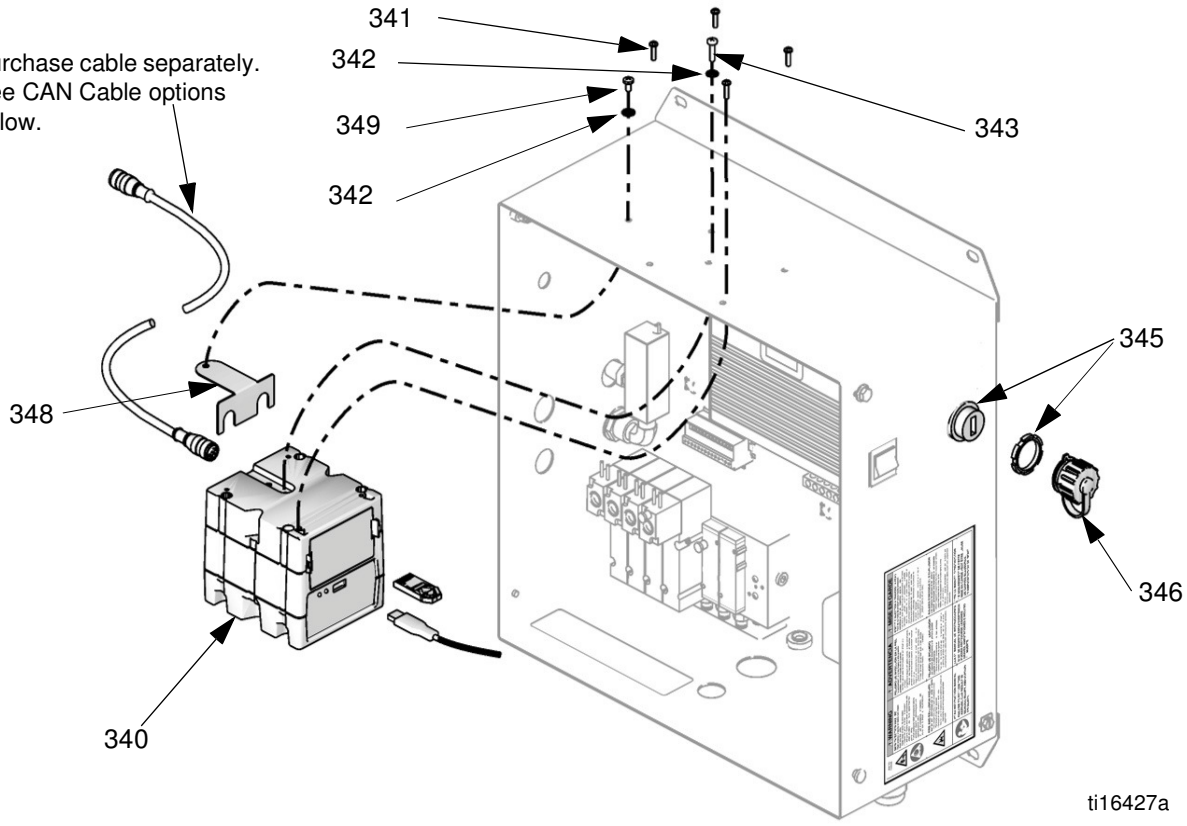


Ref.	Part	Description	Qty.
68▲	15W776	LABEL, warning	1
301	-----	ENCLOSURE, control box	1
302	16F357	MODULE, advanced fluid control	1
302a	103854	SCREWS, access cover, not shown	2
302b	-----	COVER, access, not shown	1
303	110637	SCREW, machine, panhead	4
304	16E943	MANIFOLD, solenoid	1
305	121628	SCREW, self-sealing	2
306	117356	VALVE, solenoid	
		Pump and 1-Color Meter Systems	4
		3-Color Meter Systems	6
307	114263	CONNECTOR, male	
		Pump and 1-Color Meter Systems	8
		3-Color Meter Systems	12
308	100139	PLUG, pipe	4
309	C06061	MUFFLER,	2
310	112698	ELBOW	1
311	122000	ALARM,	1
312	15V778	CABLE, IS, CAN female-female, not shown	1
313	113796	SCREW	2
314	-----	PLUG, hole	2

Ref.	Part	Description	Qty.
315	102040	NUT, lock, hex	2
316	117625	NUT, locking	1
317	117745	BUSHING, strain relief	1
318	119257	CONNECTOR, bar, ground	1
319	16G607	BUSHING, strain relief	1
320	16E890	HARNESS, solenoid/meter	2
321	24F208	COVER, control box	1
325▲	15W598	LABEL, warning	1
326	116343	SCREW, ground	1
327	223547	WIRE, not shown	A/R
328	112512	FERRULE, wire, orange, not shown	10
329	117793	HOLDER, tie	3
330	103833	SCREW, machine	2
338	552183	PLATE, solenoid mounting; 3-color models have solenoids on this plate.	2
339	195889	CONNECTOR, cord strain relief	1
340	15D906	SUPPRESSOR	1

▲*Replacement Danger and Warning labels, tags, and cards are available at no cost.*

USB Module



Ref.	Part	Description	Qty.
340	16F358	USB MODULE with TOKEN	1
341	121417	SCREW	4
342	102063	WASHER	2
343	195875	SCREW, grounding	1
345	24H084	USB HARNESS	1
346	15R325	COVER, bulkhead	1
347	15X214	LABEL, warning	1
348	16G873	BRACKET, grounding	1
349	195874	SCREW, grounding	1

NOTE: Order Kit 24H253 to add a USB Module. Includes all parts shown and instructions.

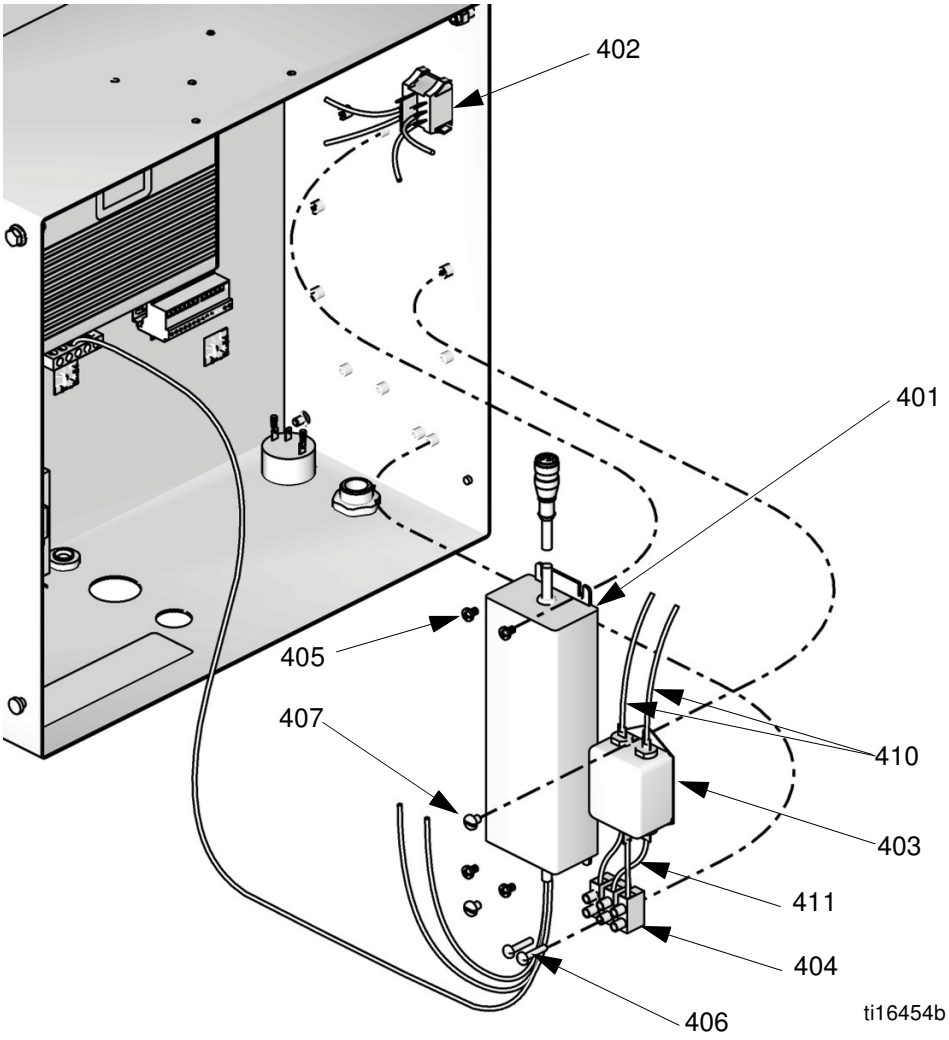
CAN Cables

Part	Description	Qty.
15V782	CABLE, for Non-IS models	1
15V778	CABLE, for IS models	1

Software Updates

Part	Description	Qty.
16D922	TOKEN, latest version of software for Advanced Fluid Control Module, Display Module, and USB Module	1

Electric Power Assembly

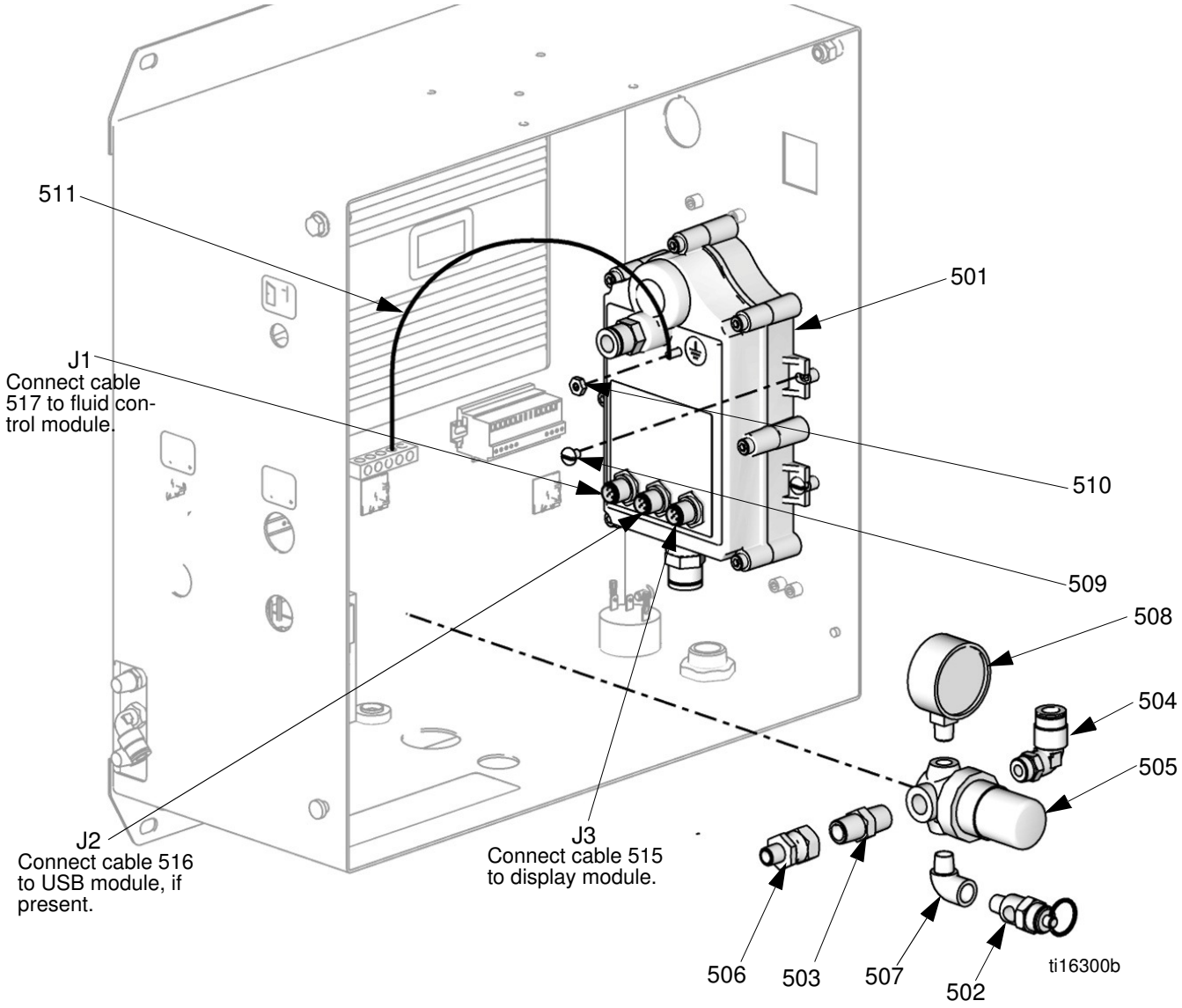


Ref.	Part	Description	Qty.
401	15V747	POWER SUPPLY, 24 VDC, 2.5 A, 60 watt, B-code, with cable	1
402	116320	SWITCH, rocker, power	1
403	115306	FILTER, power line	1
404	114095	BLOCK, terminal	1
405	112144	SCREW, machine, pan head	4
406	109467	SCREW, machine, pan head	2
407	103832	SCREW, mach	2
408	100139	PLUG, pipe, not shown	1
410	-----	HARNESS, 2-wire; 8 in. (203 mm)	1
411	-----	HARNESS, 3-wire; 4 in. (102 mm)	1

----- *Not sold separately.*

NOTE: Order Electric Power Conversion Kit 16G351 to convert an intrinsically safe air-powered alternator power supply to a non-intrinsically safe electric power supply.

Alternator Power Assembly



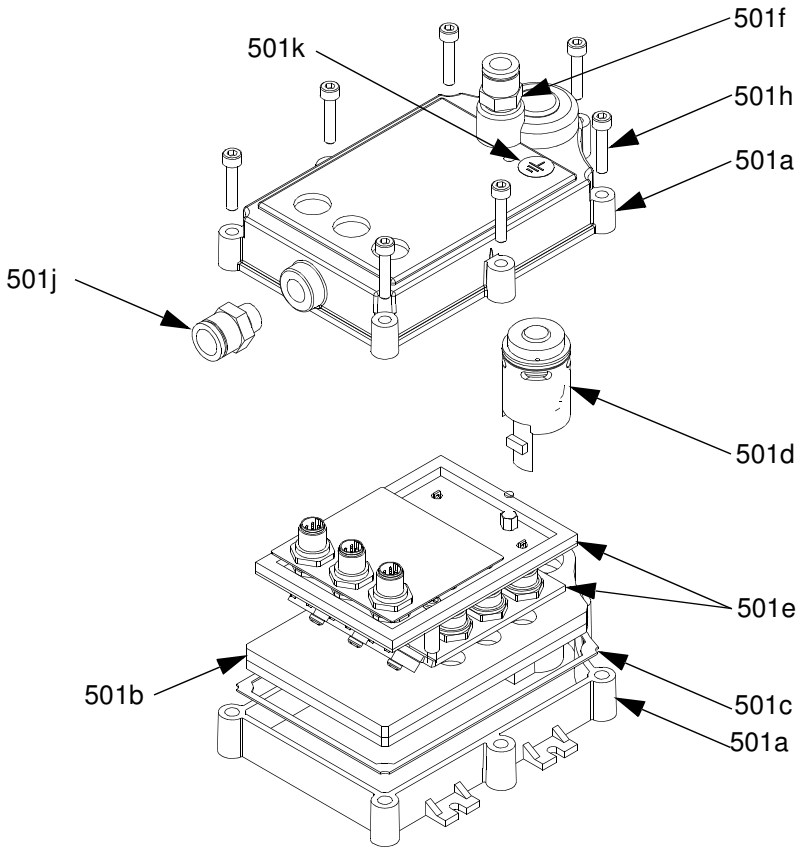
Ref.	Part	Description	Qty.
501	255728	ALTERNATOR, module, see page 47 for parts	1
502	15W017	VALVE, safety	1
503	156971	FITTING, nipple, short	1
504	115841	ELBOW	1
505	115243	REGULATOR, air, 1/4 npt	1
506	113915	UNION, swivel	1
507	112307	ELBOW	1
508	104655	GAUGE, pressure	1
509	103833	SCREW, machine	4
510	100284	NUT, hex	1
511	15B090	WIRE, grounding	1
512	112514	FERRULE, not shown	1
513	-----	TUBE, exhaust, black; 1/2 in. (13 mm) OD	3
514	-----	TUBE, air; 3/8 in. (10 mm) OD	1

CAN Cables

Ref.	Part	Description	Qty.
515	123278	CABLE, CAN; 10 ft (3.05 m)	1
516	15V782	CABLE, CAN; 2 ft (0.6 m)	1
517	15V778	CABLE, CAN; 20 in. (0.5 m)	1

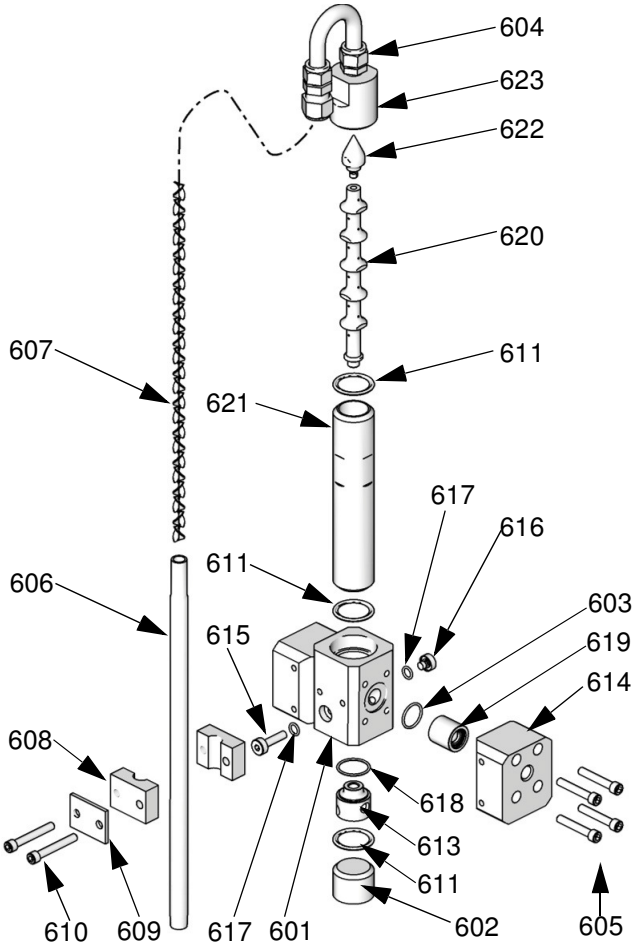
NOTE: Order Alternator Conversion Kit 16G353 to convert from an electric power supply to an air-powered alternator power supply.

Alternator Module 255728



Ref.	Part	Description	Qty.
501a	-----	HOUSING, upper and lower	1
501b	-----	GASKET, stacked, internal	1
501c	-----	GASKET, housing	1
501d	257147	TURBINE	1
501e	-----	BOARD, assy.	1
501f	122161	FITTING, air	1
501g▲	15R337	LABEL, warning, not shown	1
501h	114380	SCREW, cap, socket head	7
591j	122848	FITTING, air	1
501k▲	172953	LABEL, grounding	1

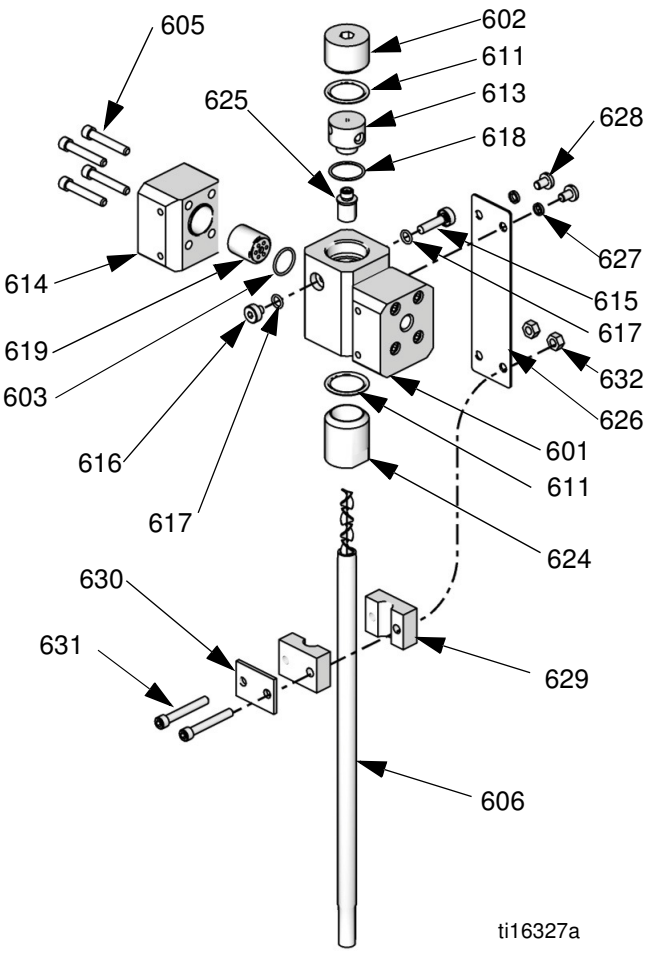
Sequential Dosing Mix Manifold 262398



ti16301a

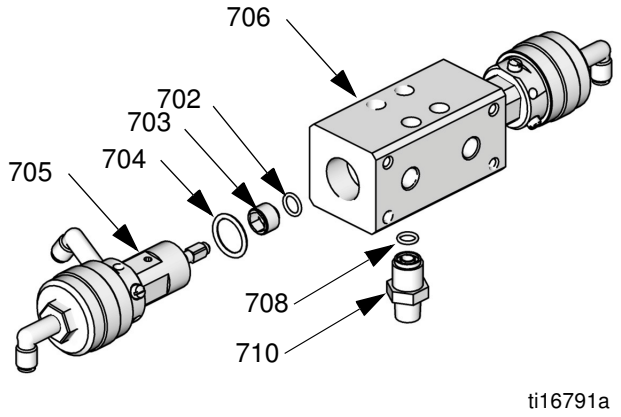
Ref.	Part	Description	Qty.
601	-----	BODY, integrator manifold	1
602	15T592	PLUG, integrator manifold	1
603	-----	O-RING	2
604	118823	TUBE, outlet	1
605	15B588	SCREW, cap, socket hd	8
606	15D430	TUBE, static mixer	1
607	118822	ELEMENT, static mixer	2
608	118830	CLAMP, body, integrator tube	1
609	118831	COVER, clamp, integrator tube	1
610	101885	SCREW, cap, socket hd	2
611	-----	O-RING	3
613	15T943	BASE, integrator	1
614	-----	MANIFOLD, end	2
615	15T748	SEAL, screw	1
616	15T749	SEAL, screw	1
617	-----	O-RING	2
618	-----	O-RING	1
619	16D658	VALVE, check	2
620	15V021	MIXER, integrator, 50cc, includes parts 621-623	1
621	-----	HOUSING, integrator, 50cc	1
622	-----	CAP, mix, integrator	1
623	-----	CAP, integrator	1

Dynamic Dosing Mix Manifold 262399



ti16327a

Ref.	Part	Description	Qty.
601	-----	BODY, integrator manifold	1
602	15T592	PLUG, integrator manifold	1
603	-----	O-RING	2
605	15B588	SCREW, cap, socket hd	8
606	15D430	TUBE, static mixer	1
607	118822	ELEMENT, static mixer	2
611	-----	O-RING	3
613	15T943	BASE, integrator	1
614	-----	MANIFOLD, end	2
615	15T748	SEAL, screw	1
616	15T749	SEAL, screw	1
617	-----	O-RING	2
618	-----	O-RING	1
619	16D658	VALVE, check	2
624	15U955	CAP, injection, 0cc, includes part 625	1
625	-----	RESTRICTOR, injection, 0.070	1
626	16G872	BRACKET, mounting	1
627	105510	WASHER, lock	2
628	100609	SCREW, machine, panhead	2
629	118830	CLAMP	2
630	118831	COVER, clamp	1
631	101885	SCREW, cap, sockethead	2
632	112223	NUT, hex	2



1-Color/1 Solvent Valve Stack

Ref.	Part	Description	Qty.
702*†	-----	O-RING	2
703*†	-----	SEAT, valve	2
704*†	-----	O-RING, PTFE	2
705	15X303	VALVE, dispense	2
706◆	16F057	MANIFOLD, valve, 1-color, 303 stainless steel	1
708*	110004	O-RING	2
710	16F064	FITTING, CC	1

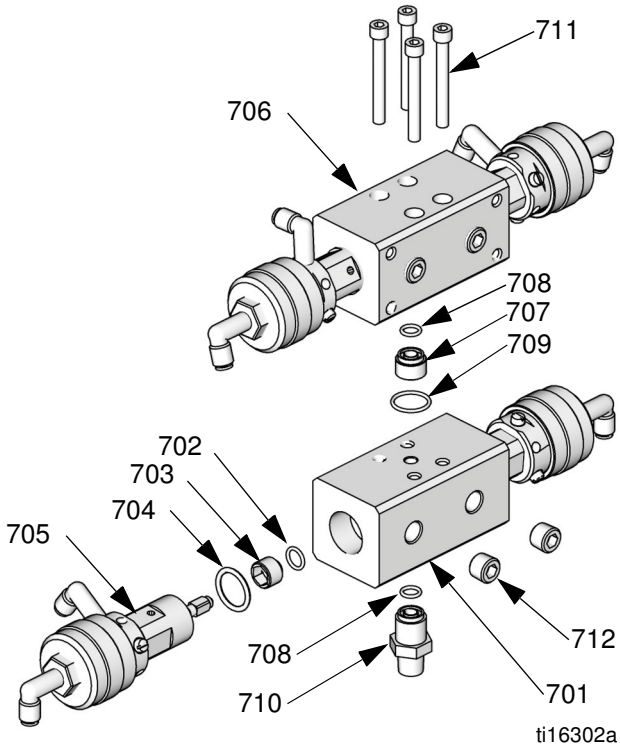
--- *Parts not sold separately.*

* *Parts included in Valve Stack Rebuild Kit 24H254. This kit includes wear parts for 1-color and 3-color valve stacks. Order Kit 16A560 to replace a single seat (includes 702-704). Order Kit 15U933 to repair a single dispense valve.*

† *The standard valve seat (703) is SST. To install a carbide seat, order Kit 24U054. The kit includes a single carbide seat and o-rings 702 and 704.*

◆ *The standard manifold (706) is 303 SST. To install a 316 SST manifold, order Kit 24V017.*

NOTE: Order Kit 24H255 to convert an existing 1-color system to a 3-color system.



3-Color/1 Solvent Valve Stack

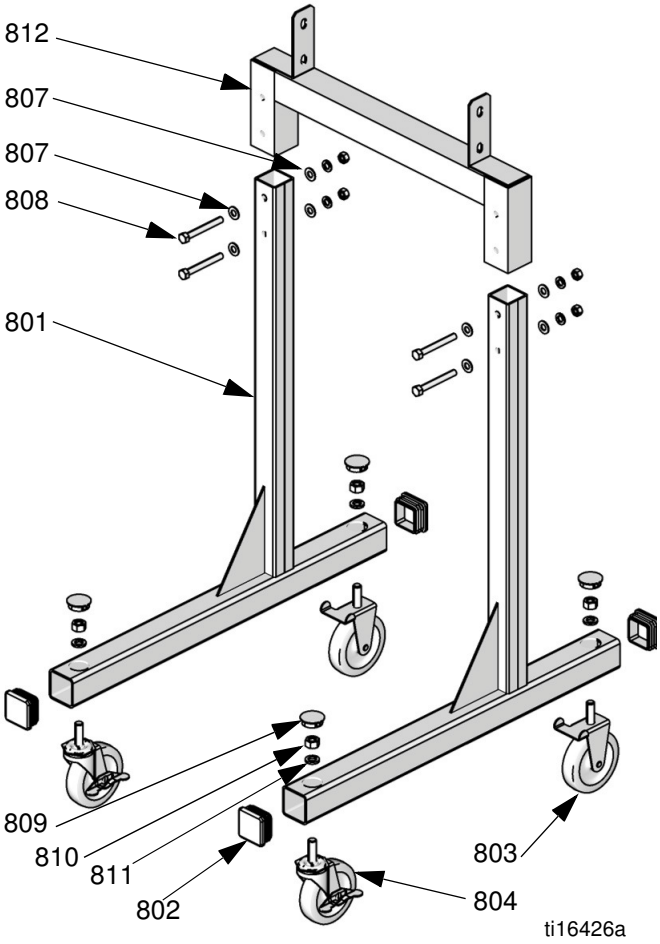
Ref.	Part	Description	Qty.
701	16F058	MANIFOLD, valve, 3-color	1
702*†	-----	O-RING	4
703*†	-----	SEAT, dump valve	4
704*†	-----	O-RING, PTFE	4
705	15X303	VALVE, dispense	4
706◆	16F057	MANIFOLD, valve, 1-color, 303 stainless steel	1
707*	-----	SPACER, manifold	1
708*	110004	O-RING	2
709*	111116	O-RING	1
710	16F064	FITTING, CC	1
711	100642	SCREW, cap, socket hd	4
712	101970	PLUG	4

--- *Parts not sold separately.*

* *Parts included in Valve Stack Rebuild Kit 24H254. This kit includes wear parts for 1-color and 3-color valve stacks. Order Kit 16A560 to replace a single seat (includes 702-704). Order Kit 15U933 to repair a single dispense valve.*

† *The standard valve seat (703) is SST. To install a carbide seat, order Kit 24U054. The kit includes a single carbide seat and o-rings 702 and 704.*

◆ *The standard 1-color manifold (706) is 303 SST. To install a 316 SST manifold, order Kit 24V017.*

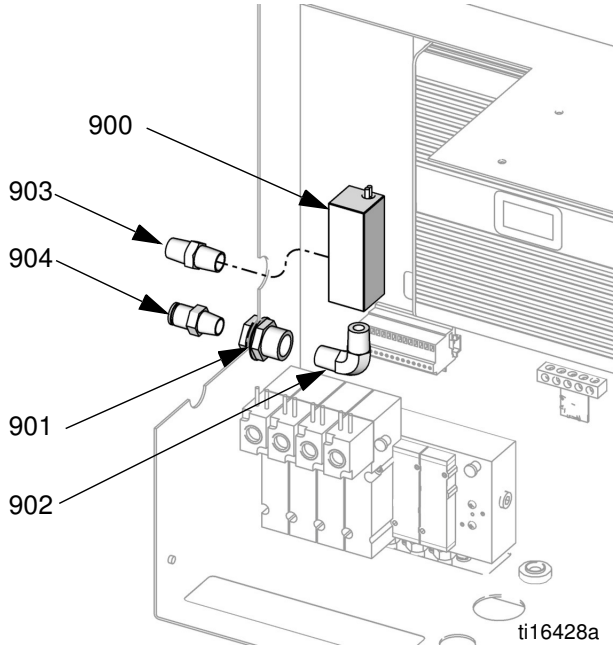


Pump Stand Kit 24F301
Meter Stand Kit 24G611

Ref.	Description	Qty.
801	TUBE, cart	2
802	PLUG, tube	4
803	CASTER, cart	2
804	CASTER, swivel	2
805	NUT	8
806	WASHER	8
807	WASHER	16
808	SCREW, cap, hex hd‘	8
809	PLUG, button	4
810	NUT	4
811	WASHER	4
812	ADAPTER, meter stand only	1

NOTE: Stand parts are not sold separately.

Air Flow Switch Kit 15T632



Ref.	Part	Description	Qty.
900	119159	SWITCH, air flow	1
901	-----	FITTING	1
902	-----	ELBOW, 1/4 npt	1
903	-----	NIPPLE, 1/4 x 1/4 npt	1
904	-----	CONNECTOR, tube	1

Accessories

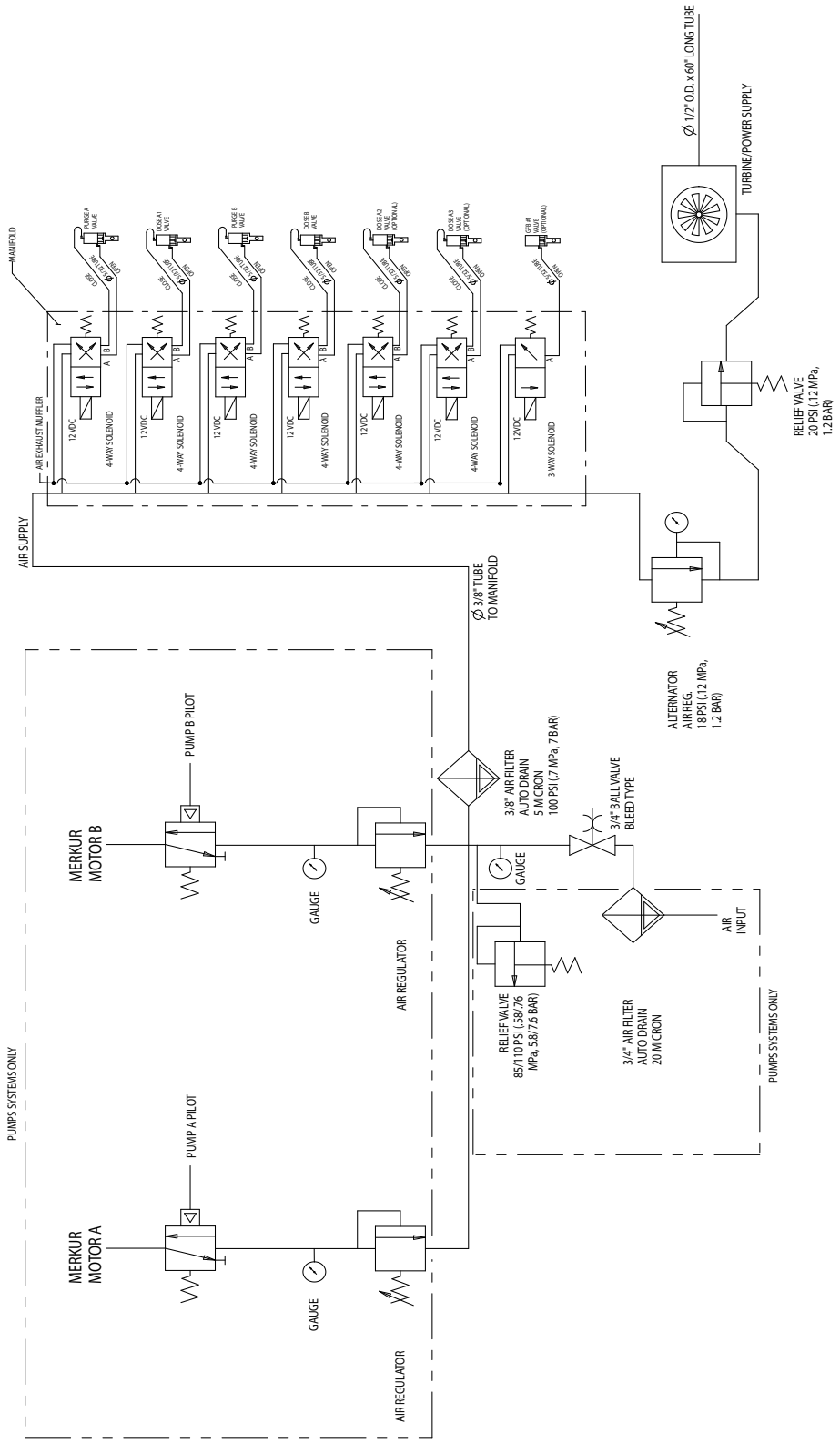
ProMix 2KE systems are not approved for use in hazardous locations unless the base model, all accessories, all kits, and all wiring meet local, state, and national codes.

Part	Description
USB Module	
16F358	USB Module Kit, see page 44
Air Flow Switch	
15T632	Air Flow Switch, see page 50
Power Kits	
16G351	Electric Power Kit, see page 45
16G353	Alternator Power Kit, see page 46
Cables	
123278	10 ft (3.05 m), Yellow, IS CAN Cable, male x female
123280	50 ft (15.25 m), Yellow, IS CAN Cable, male x female
15U533	50 ft (15.25 m) IS CAN Cable, Blue, female x female
Air Filter Kits	
15D909	5 micron air filter replacement
15D890	40 micron air filter replacement
Stand Kits	
24F301	Pump Stand Kit, see page 50
24G611	Meter Stand Kit, see page 50
Dosing Kits	
15V021	50cc Sequential Dosing
24B618	100cc Sequential Dosing
15U955	0cc Dynamic Dosing
Meter Kits	
15V806	1/8 in. Coriolis Kit
16D329	S3000 Solvent Meter Kit
Gun Flush Box	
15V826	Gun Flush Box
3-Color Conversion Kit	
24H255	Convert a Meter System from 1 Color/1 Solvent to 3 Colors/1 Solvent
Seat Kit	
24U054	Convert a standard SST Valve Seat to a Carbide Seat, see page 49

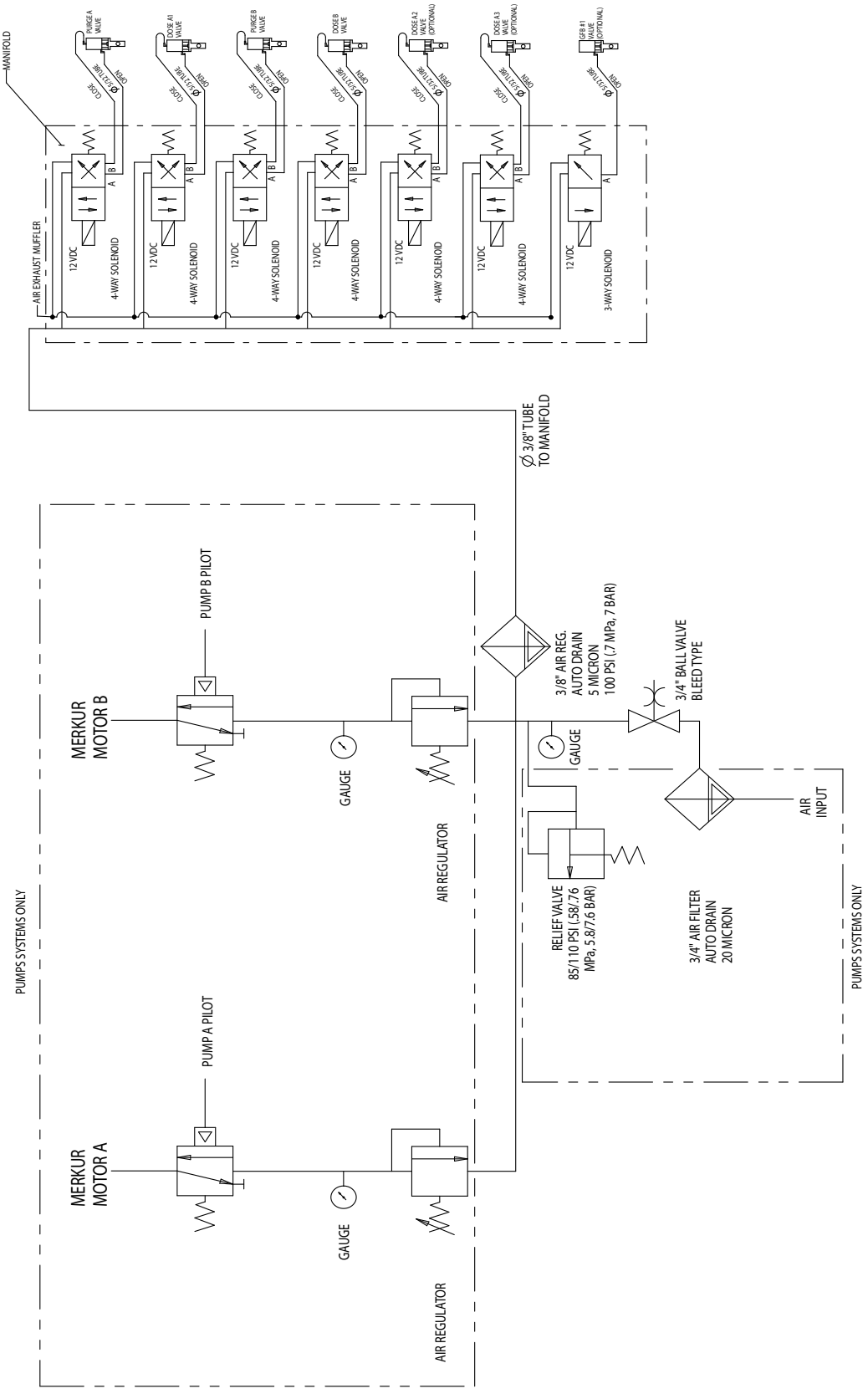
Part	Description
Gun Holder Kits (for GFB)	
198787	ProXS2
198405	ProXs3, ProXs4
196768	PRO 3500, 3500hc, 4500
15T646	AirPro Air Spray
196769	Delta Air Spray
196770	Alpha
196771	Alpha Plus, Alpha Plus RAC
15G093	G15
15G346	G40, G40 RAC
Pump Accessory Kits	
256410	Hopper, 1.5 gallon (1 l) polyethylene)
243340	5 gal (18.9 l) pail cover with agitator
222121	Fluid regulator, stainless steel Maximum working pressure: 1500 psi (10.3 MPa, 103 bar) Regulator range: 150 - 1200 psi (1.0-8.2 MPa, 10-82 bar)
24A587	Pump outlet fluid filter, stainless steel, 60 mesh (250 micron), 5000 psi (35 MPa, 350 bar)
256425	Fluid filter drain valve, stainless steel, 5000 psi (35 MPa, 350 bar)
224458	Fluid filter screen element, 3-pack, 30 mesh, stainless steel
224459	Fluid filter screen element, 3-pack, 60 mesh, stainless steel
24A954	55 gal Drum Suction Hose and Strainer, 3/4 in. fluid inlet
24B598	55 gal Drum Suction Hose and Strainer, 1 in. fluid inlet
24B337	Stand Mount Suction Hose, PTFE lined, 3/4 in. inlet
24B338	Stand Mount Suction Hose, PTFE lined, 1 in. inlet
24B424	Wall Mount Suction Hose, PTFE lined, 3/4 in. inlet
24B425	Wall Mount Suction Hose, PTFE lined, 1 in. inlet

Schematics

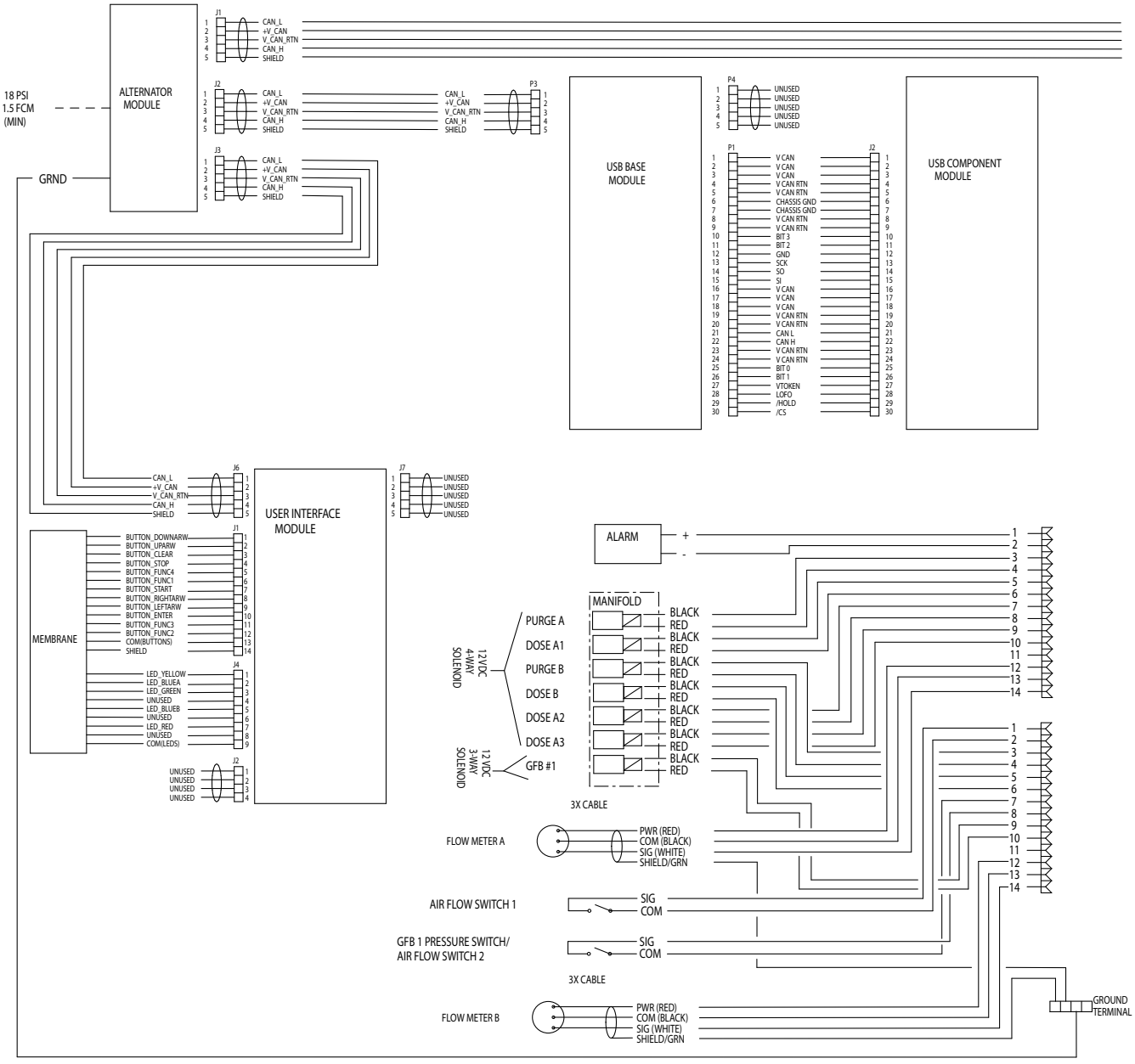
Hazardous Location System Pneumatic Schematic



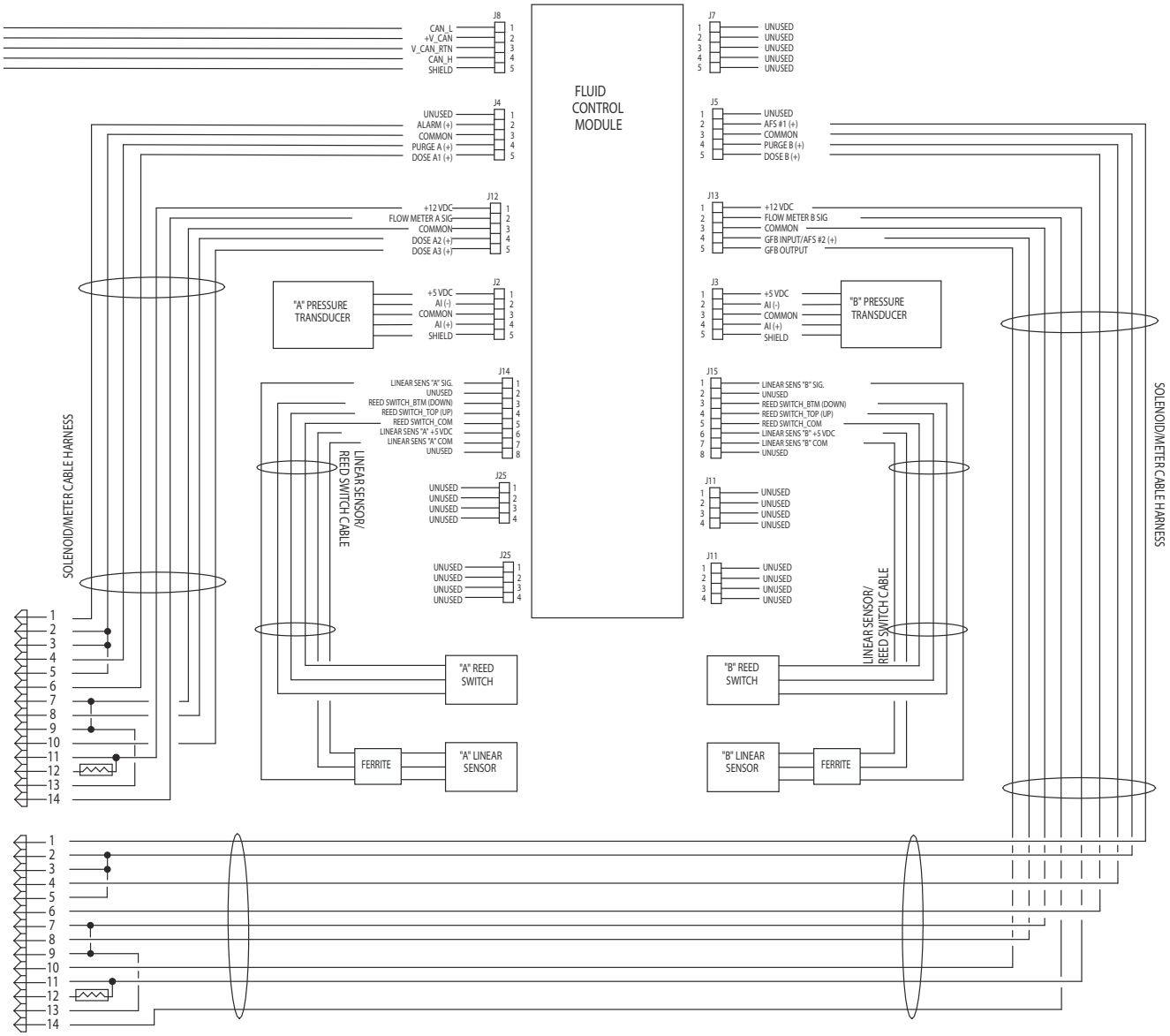
Non-Hazardous Location Pneumatic Schematic



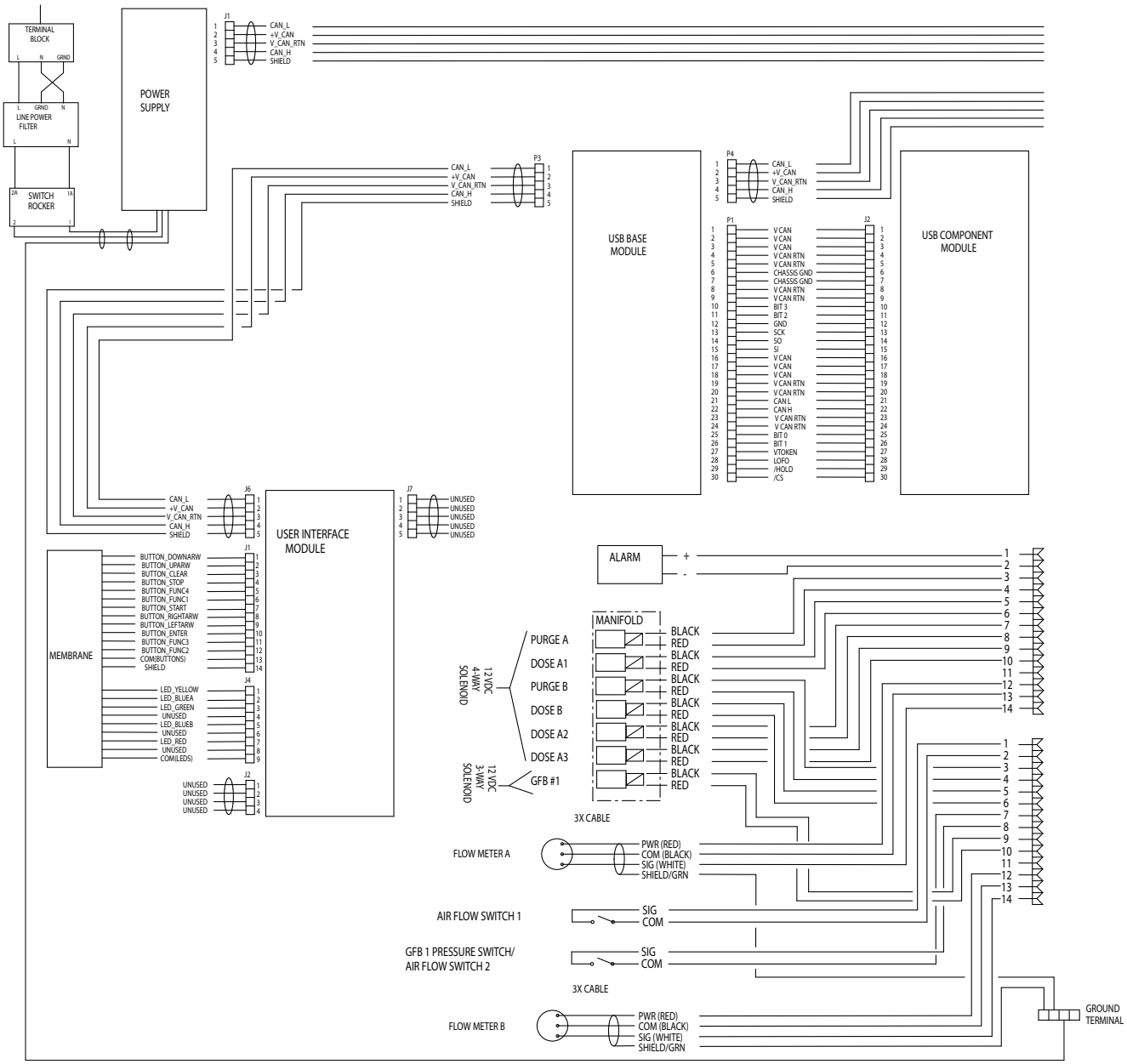
Hazardous Location Electrical Schematic



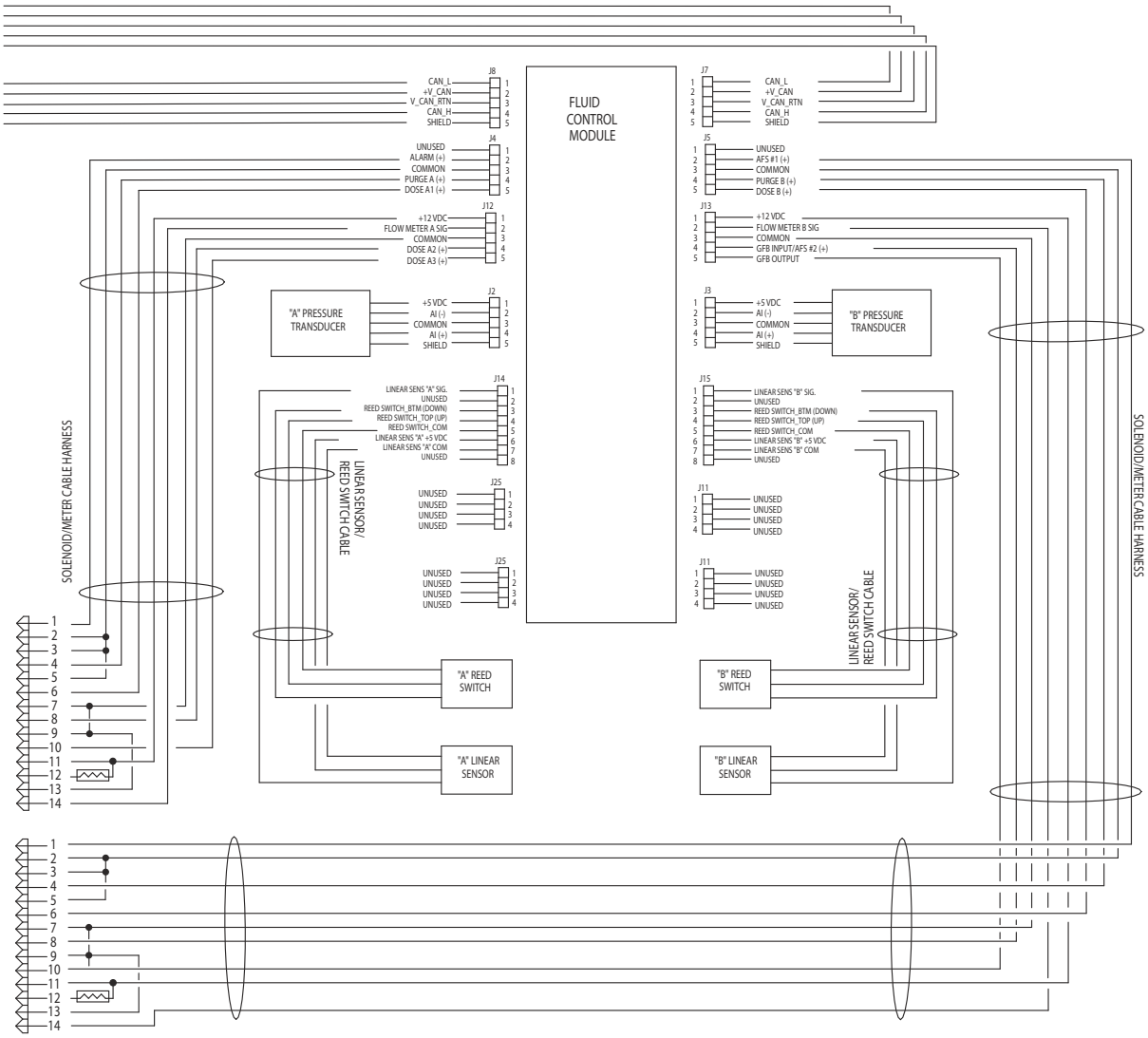
Hazardous Location Electrical Schematic (continued)



Non-Hazardous Location Electrical Schematic



Non-Hazardous Location Electrical Schematic (continued)



Technical Data

ProMix® 2KE		
	US	**Metric**
Maximum fluid working pressure	See **Hazardous Location Models**, page 4.	
Maximum working air pressure	100 psi	0.7 MPa, 7 bar
Air supply	75 - 100 psi	0.5 - 0.7 MPa, 5.2 - 7 bar
Air filter inlet size	3/8 npt(f)	
Air filtration for air logic (Graco-supplied)	5 micron (minimum) filtration required; clean and dry air	
Air filtration for atomizing air (user-supplied)	30 micron (minimum) filtration required; clean and dry air	
Mixing ratio range	0.1:1- 30:1	
On-ratio accuracy	up to ± 1%, user selectable	
Fluids handled	one or two component: • solvent and waterborne paints • polyurethanes • epoxies • acid catalyzed varnishes • moisture sensitive isocyanates	
Viscosity range of fluid	20- 5000 cps	
Fluid filtration (user-supplied)	100 mesh minimum	
Fluid flow rate range G3000, G250 Meter G3000HR, G250HR Meter Coriolis Meter S3000 Solvent Meter (accessory)	 0.02-1.00 gal./min. 0.01-0.50 gal./min. 0.005-1.00 gal./min. 0.01-0.50 gal./min.	 75 - 3800 cc/min. 38 - 1900 cc/min. 20 - 3800 cc/min. 38 - 1900 cc/min.
Fluid inlet sizes Flow Meter Dose Valve/Color Valve Adapters	 1/4 npt(f) 1/4 npt(f)	
Fluid outlet size (static mixer)	1/4 npt(f)	
External Power Supply Requirements	85 - 250 Vac, 50/60 Hz, 2 amps maximum draw 15 amp maximum circuit breaker required 8 to 14 AWG power supply wire gauge	
Operating temperature range	41- 122° F	5-50° C
Approximate Weight Meter Systems Pump Systems	 200 lb 300 lb	 91 kg 136 kg
Environmental Conditions Rating	indoor use, pollution degree (2), installation category II	
Noise Level Sound pressure level Sound power level	 below 70 dBA below 85 dBA	
Wetted parts	303, 304 SST, Tungsten carbide (with nickel binder), perfluoroelastomer; PTFE	

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

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